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JUNE 1958

MODEL AIRCRAFT

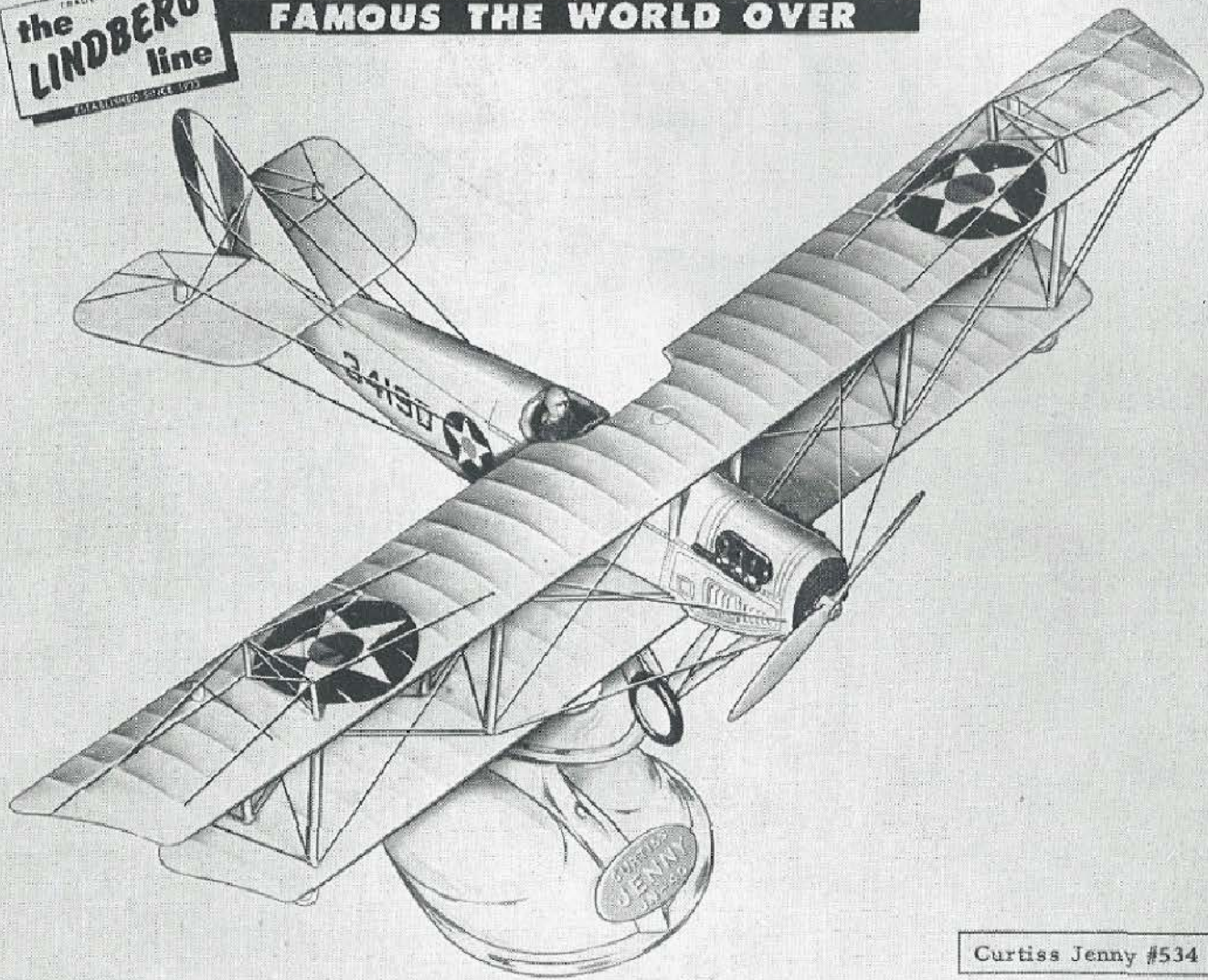


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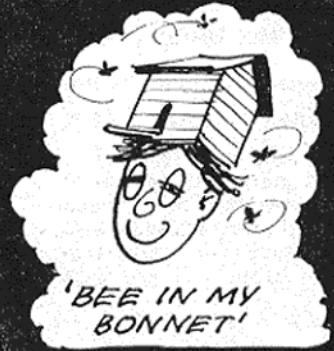
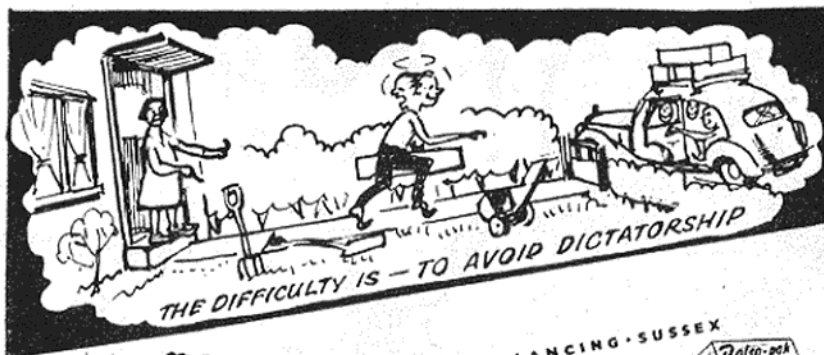
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moment. I have a 'Bee in my Bonnet' about politics at the moment. I just think our Parliamentary Institution hasn't grown with the times and is overdue for an overhaul.

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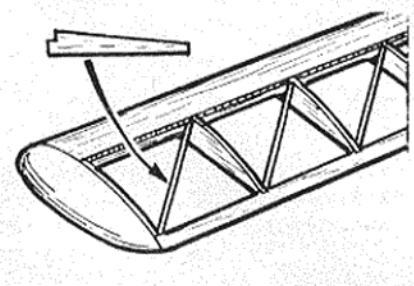
The difficulty is to avoid dictatorship. I carry my hatred of dictatorship to the extent that I try never to impose my views on anyone. The more discussion the better but, in business anyway, someone has to be the 'Boss' and have the final say or nothing gets done.

It is the "think as I say or else" attitude that seems inseparable from all the 'isms' that I dislike.

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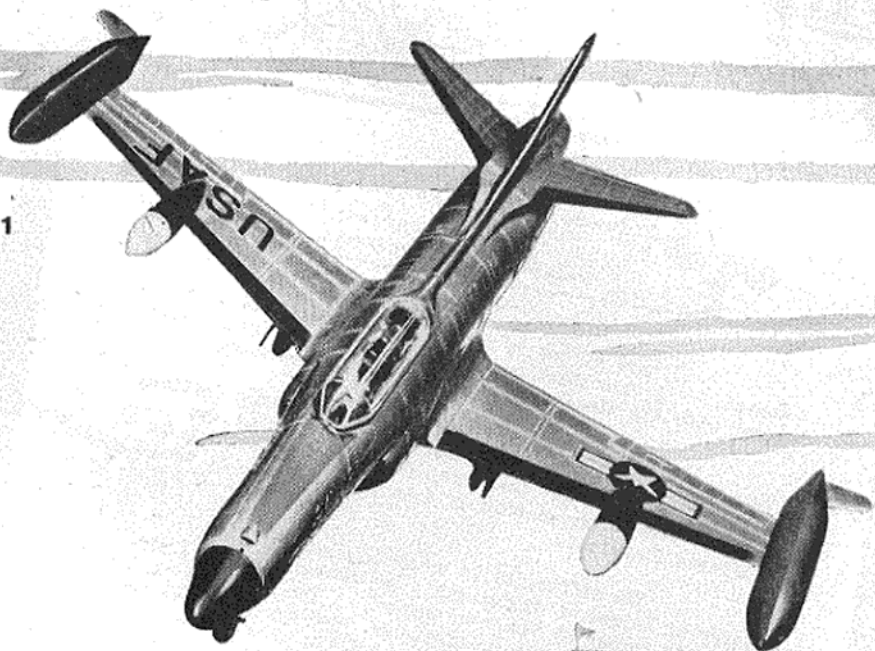


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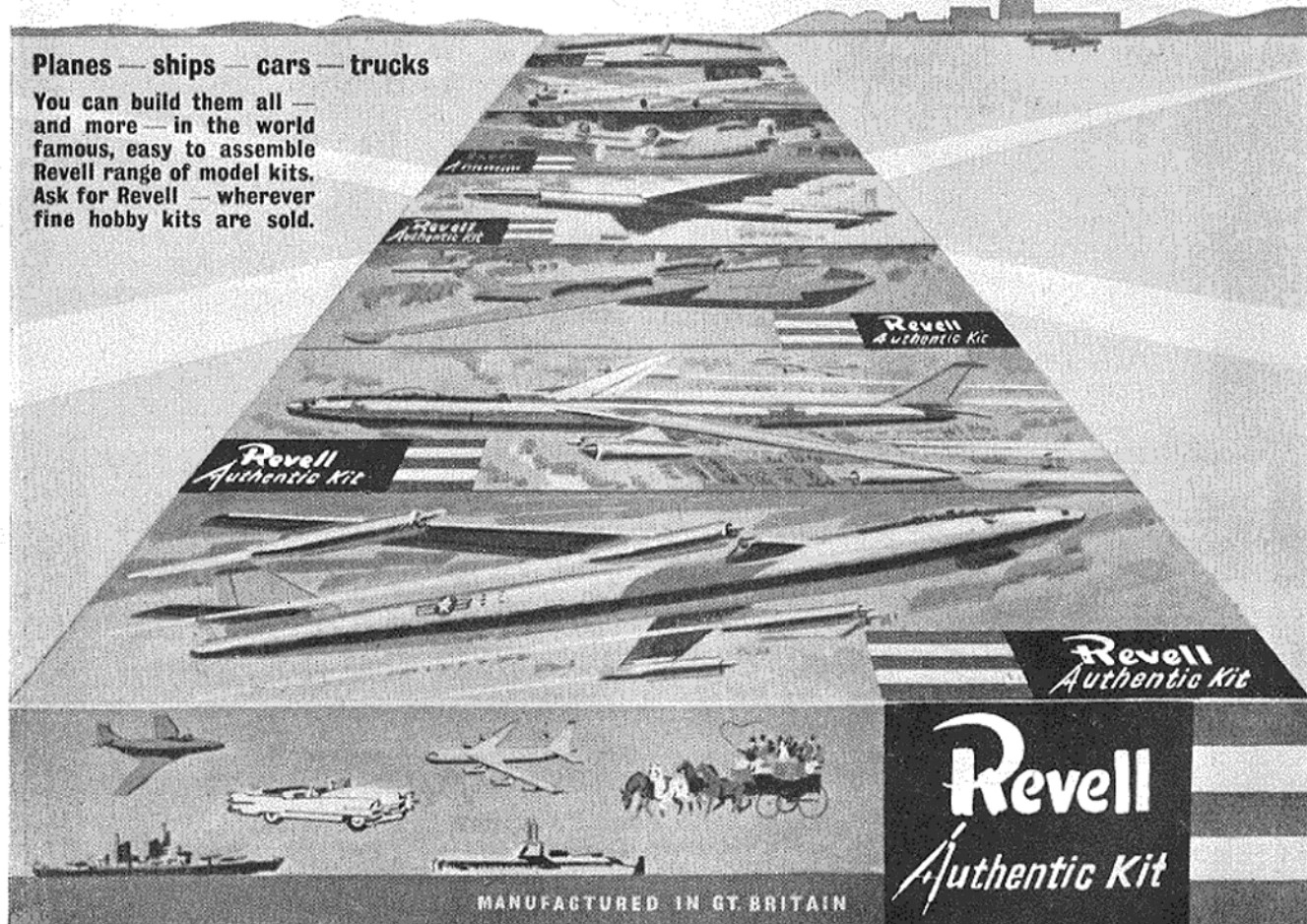
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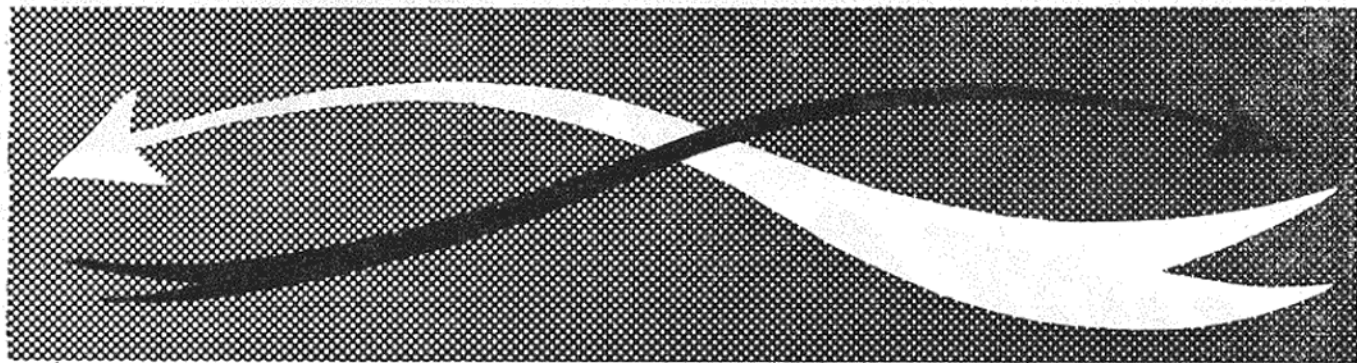
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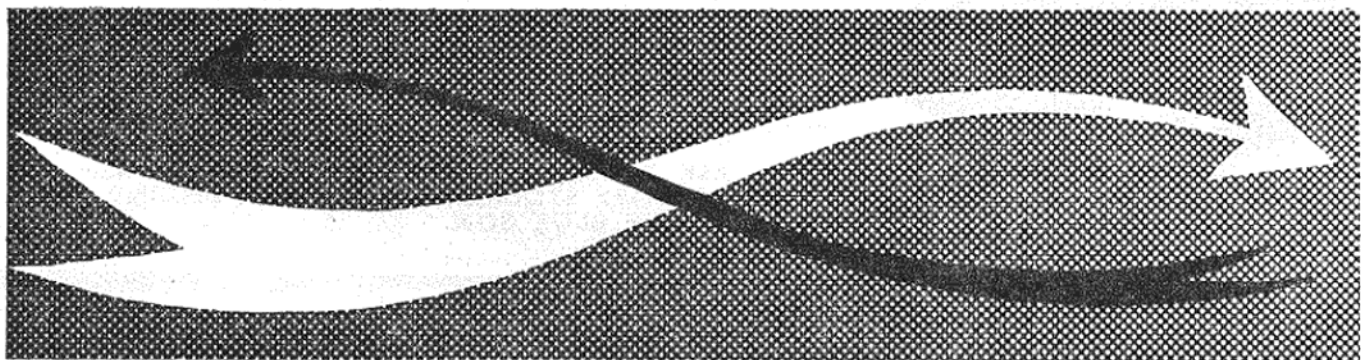


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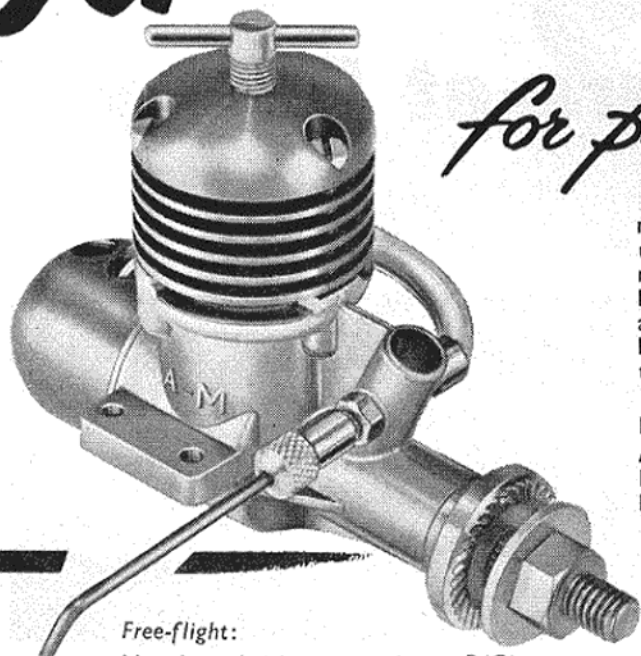
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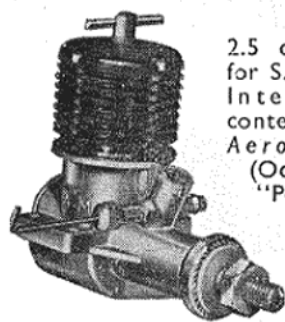
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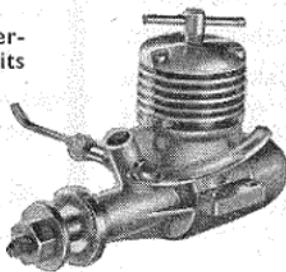
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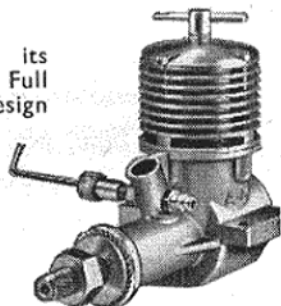
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S.E.5a for the M.A. Exhibition

FOR the many enthusiasts who have never even seen, let alone examined, a World War I fighter, their opportunity will come at the MODEL AIRCRAFT Exhibition, where, in addition to the many model attractions, an S.E.5a will be on view for all to inspect at close quarters. The Exhibition will be held at the New Horticultural Hall, Westminster, S.W.1, over the period August 20th-30th, and it is possible that the S.E.5a will not be the only interesting full size aircraft on display—but further developments will be announced later.

A vintage aircraft was chosen as having the widest possible appeal to modellers, whose efforts in the "vintage field"—both flying and solid models—are continually on the increase. As regards the choice of a particular aircraft—the S.E.5a was probably used for more aerial combats during the 1914-18 War than any other type and many of the famous British aces such as Mannock and McCudden flew S.E.s, thus making it of special appeal.

As a matter of interest, the particular S.E.5a to be shown forms part of the Nash Collection of historical aircraft and at one period during its peacetime career was used for sky-writing.

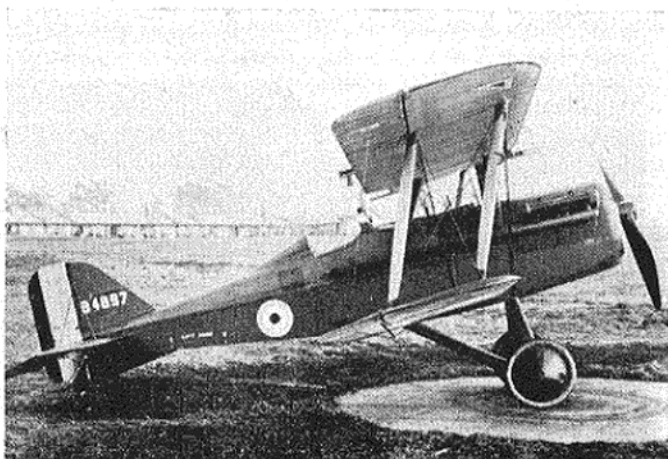
Entries for the competition section of the Exhibition are steadily rolling in and if you haven't yet entered and are interested in doing so, full details will be found on page in the advertisement section of this issue.

having the widest possible appeal to

New R/C Record

AMERICAN flier Ken Willard, who recently flew a radio model 30 miles over water across the Catalina Channel, has set—subject to ratification—a new world radio-control duration record. It is reported that he used the same 6 ft. wingspan K & B Torpedo-powered Avalon *Breathless* as in the previous flight, to put up a time of 5 hours

An S.E.5a—the type that will be on show at the "Model Aircraft" Exhibition (Imperial War Museum photo.)



19 minutes, finally landing the model within a few yards of the take-off point. Willard's time exceeds the existing record of Jean Pierre Gobeaux by 52 minutes.

Wembley Success!

THE reception by an audience of 90,000 schoolboys to the C/L display given by the London Area prior to the England v. Scotland Schoolboys' International Football match at Wembley on April 26th was very encouraging. Each event was greeted with a cacophony of appreciative shouts, whistles and rattles, though the greatest applause was reserved for the combat and balloon busting.

The demonstration opened with two stunt circles followed by a four-up combat joust, then two simultaneous, three-in-a-circle balloon bursting bouts, and it was to have concluded with a class "B" team race. Unfortunately, only one racer turned up but this made several high speed demonstration runs.

Although the weather was dull and very gusty, all the flights went off smoothly and there was only one "casualty." This occurred in the balloon busting when one of the models caught its lines on the stick supporting a balloon, and cart-wheeled in.

An interesting point emerged from the demonstration, and should be remembered for a future occasion: it was not the intricate stunt patterns which drew oohs and aahs from the crowd, but low pullouts from wing-overs, low flying in general, and particularly near misses in combat and balloon busting.

The conclusion of the show drew an appreciation from the boys that far eclipsed that for any other of the pre-match attractions. Similar appreciation is due from modellers to the London Area fliers for putting on the show, Ken Brooks, who made

all the arrangements with Wembley Stadium, and Henry J. Nicholls, who organised the actual flying and gave a sparkling commentary over the P.A. while it was in progress. In addition, not only did the show provide excellent publicity for model flying but the payment for it will augment the International Contest Fund to the tune of some £100.

Proof that the display was well worth while is already to hand, for numerous members of the audience have written to the S.M.A.E. for details of its activities.

Heli-Kite History

THE considerable interest shown in our feature "Have fun with a Heli-Kite" published in the March issue prompted us to dig a little further into the history of this type of model. It would appear that the idea is by no means new. Reginald Brie, who, before the war was chief test pilot for the Cierva Autogiro Company, built and flew a model autogiro kite somewhere around 1938. C. B. Chupp was another experimenter and also a professional, being with the Autogiro Company of America. His model was basically similar to Brie's and was actually marketed in the United States in kit form in the 1940's, together with a powered version for C/L flying.

Nearer home, Lt.-Cmdr. Sproule produced his version of a helicopter kite quite independently, having no knowledge of these previous experiments, and based purely on his experience in piloting full-size heli-



This pre-war photo by Charles E. Brown shows Reginald Brie with his original Heli-kite

copters. As a matter of interest it was Lt.-Cmdr. Sproule who invented the scoop net used by helicopters in air-sea rescue work.

Certain common features were apparent in all three experimental models, although the Sproule design looked rather different with a fin mounted under the fuselage, and it also incorporated a form of sprung tether.

Of models based on the Brie and Chupp designs and Sproule's original model—actually a design developed through several experimental models—the latter proved to be the most consistent and was absolutely stable under all conditions, from gusty winds to light breezes.

Morley and Blundell opened the Wembley C/L display with a demonstration of stunt flying



Topical Twists

by PYLONIUS

Getting A-Head

Too many new clubs get off on the wrong foot by starting out in life with some racy or flippant title like "Dope Peddlers" or "Nimbus Nudgers," but at least one newcomer to our fold has the good taste to choose a name that is both distinctive and impressive. I refer to the "Goatshead Knights."

Now, if I may be permitted just one tiny criticism of such a gallant title I should have thought that the choice of head could have been more selective. Goats may have strong connections with the world of aviation, in that they are favoured as R.A.F. mascots and used by junior members as models of behaviour, but are hardly a suitable animal to feature on a knightly standard.

Perhaps the title was chosen in deference to the local where, no doubt, the gallant gentlemen foregather to plan their deeds of derring-do on the flying field. If this is the case it is unfortunate that the ancestral jugwielders who named the place were not aware of the nobler animal life that existed outside the farmyard. Boars, Stags and Saracens are the sort of heads more usually associated with knightly sorties, and it is a pity this valiant club couldn't have got a good head start.

Space Age

As a two left-handed modeller my approach to the building side of the hobby is the cut and dash, shortest route to the flying field one. Perhaps if I were gifted with a more delicate touch with the balsa chopper I might have a greater affection for the work bench and burn up the midnight oil with all the gusto of a galley slave. But, as it is, I'm all for the wide open spaces and the minimum of balsa bashing, leaving the delights of craftsmanship to the patient skill of the scale modeller.

Now, scale modelling is something of a mystery to me, but I can see that it has its rewards. Just think, for example, of the wonderful sense of relief you experience when the perishing model is at long last finished. Gazing proudly at the completed masterpiece you might feel that the empty hours of television abstinence were almost worth it. But what to do with the latest creation?

Well, there's that space going begging over the lounge bookcase, that is, if great grandfather wouldn't mind his fungus obscured in a good cause. Or what about that S.E.5, standing precariously on the sideboard with its single undercart leg. After stoutly suffering three months of vigorous wifely dusting the veteran warplane is showing distinct signs of combat fatigue.

Then there's that equally battered relic hanging dizzily over the mantelpiece by the one remaining thread. True, it has the distinction of being the only monoplane version of the Fokker Triplane in existence, but, as the dummy of von Richthofen has already abandoned the aircraft by an unconventional exit through the bottom of the fuselage, perhaps, together with the S.E.5, it could be relegated to the workshop rafters.

So, were it not for the space problem, the scale modeller, like the politician, would be a happy man, but with the house and adjacent outbuildings crammed to overflowing with his historic collection he's got more wrinkles than the wing of my Wakefield. Of course, if he didn't have such a strong sense



of vocation he could destroy or at least give away some of the older relics to make way for the new, but no modeller worth his balsa dust would ever commit such heresy.

Little wonder, then, that the scale enthusiast has for some time been casting a covetous eye at all that glorious garden area going to waste. But now, some of the more adventurous spirits are putting the wasteland to good use. Instead of building the usual diminutive model which might go between the bookcase and the telly with a bit of a squeeze, they are turning out full size models which nicely fill that gaping space between the house and the tool shed.

It occurs to me that there might be another reason for this outbreak of full size modelling. Ever since the first model took the air it has been the ambition of model man to photograph the airfield scene from above. In pursuit of this enterprise, generations of Brownie cameras have been lashed to complaining fuselages, but the results have hardly justified the destruction of so many family cameras. The general standard is barely up to that of those snap-happy gentlemen who take those muddy looking pictures of flying saucers. Even the best efforts are more reminiscent of a foggy night in Trafalgar Square than the sunlit scene at Radlett.

I suspect that, in desperation, these overhead camera types are building models large enough for them to climb in and do the job properly.



ix Plus

A complaint from the Wolves M.A.C. seems to suggest that members are taking the name of the club too much to heart by pursuing the fair sex rather than their models. The beguiling charms of motor cycles, too, are having a depleting effect on membership, and altogether the Wolves are hard put to keeping the wolves from the door.

To add to their tribulations, an oversight on the part of the Education authorities has deprived them of their clubroom, a situation which has encouraged the wayward members to drift towards girl friends, motor cycles and other undesirable temptations.

This must leave the Wolves M.A.C. feeling rather bitter towards the nut cramming profession. After all, were it not for the shortcomings of the education system the young men would have been taught sufficient good sense to stick to a nice safe pastime like modelling and to keep well clear of such dangerous things as motor cycles and girls.

But there may be something to be said for any indifference that the Education people have displayed towards the club. They have their academic pride, and might not take too kindly to the skittish maltreatment of the English language. The use of the debased abbreviation, Wolves, might be all right for footballers and people like that, but for occupiers of their classrooms—well!



Tail Twists . . .

In a club where juniors build models on Tuesday evening to fly on the following Sunday, senior members are asked to watch their step.—In case they trip over the wreckage?

It is reported that a Combat final could not be flown due to lack of moonlight.—Obviously it takes a full moon to work the plane bashers up into a proper state of frenzy.

The main feature of a newly acquired flying field is the wide runway, used as a motor cycle speedway.—The club member's dream come true.

M.A. calls A.M.

We pay a visit to the Allen-Mercury factory to get some gen on this the youngest of our (quantity) engine manufacturers.



ALLEN-MERCURY engines are now universally known in the model world, yet it is only four years since they first came into being, and then almost by accident. Dennis Allen, who contributes the first half of the name (the Mercury comes from the registered trade mark of Henry J. Nicholls Ltd., who are sole trade distributors), is well known to modellers especially as a stunt, R/C and team race enthusiast, and has been associated with the engine side of the trade since the early post-war years. Initially he was in charge of the engine repair section at Henry J. Nicholls' shop in Holloway Road, then, as British-made motors became more popular and easily obtainable, and the demand for patching up and renovating older, mostly foreign, ones decreased, he was associated with Alan Allbon in the production of the original Allbon 2.8 c.c. This was followed by a period in general light engineering before he was invited to take charge of the production of the 3.5 c.c. B.B. Amco.

During this period, working in his spare time, Dennis designed and built a prototype of a 2.5 c.c. motor, which he offered to Amco's. They, however, were not interested in extending their range, so realising the future demand for a good 2½ he decided to go ahead by himself—the result is now known to everyone—the A.M. 2.5.

Initial Allen-Mercury production was only 12 motors a week, but they proved

that the market had been accurately forecast, and by taking on two assistants and working long hours, it was possible to increase gradually the output to 50 per week. However, the demand was such that it was obvious that further steps would have to be taken to step-up production. This was when "Stoo" came into the picture.

Len (Stoo) Steward needs no introduction to our readers, but some may not know that he, also, has been connected with model engines for many years, working originally on the "K" (Kemp) series of motors. He accepted an invitation to join Dennis and then production was raised to an average of some 100 motors per week, peaking on one never-to-be-forgotten occasion at 200 per week.

The increasing popularity of the 2.5, coupled with the introduction of the equally successful 3.5, strained production capacity to the limit. Nevertheless, sensing the potential demand for a smaller motor, a design capable, like its larger brothers, of being (with but small modification) produced in two sizes (in this case 1 and 1.5 c.c.) was put in hand—the result?—the phenomenally successful A.M.10.

Although it was possible to produce almost twice as many of these small motors per week than either of the two larger ones (we should mention that a manufacturer seldom produces his entire range at the same time—A.M.'s devote one week to 3.5s, the next to 2.5s, the next to 1.0s and so on), the demand far outstripped the supply. There was only one answer—larger premises.

About a year ago the pleasant factory

that they now occupy became vacant, and an alliance was formed with Leslie Parker, who has been engaged in light engineering for many years, more recently specialising in parts (spray bars, needle assemblies, etc.) for various manufacturers. Machinery was pooled and the present company, D. J. Allen (Engineering) Ltd., formed.

The change of premises resulted in an immediate increase in output to its present level, which just about keeps up with demand, but new machinery is being added (when we arrived another capstan lathe was awaiting installation) and this will doubtless be needed, for the long-awaited 1.5 is now in production.

What of this new motor? It's hot; certainly one of the hottest 1½s in quantity production, but, anyway, by the time these words are being read it will be in the shops, so readers can judge for themselves, and needless to say it will be featured in an M.A. Engine Test very shortly.

The actual manufacture of the A-M motors is, of course, basically the same as used for all model engines, and is interesting to see. It must be understood, however, that no manufacturer produces a complete engine, certain parts—notably crankcase castings—are beyond the resources of light engineering

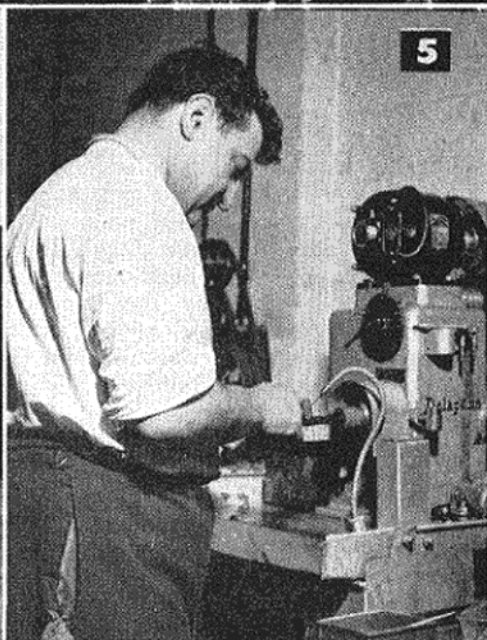
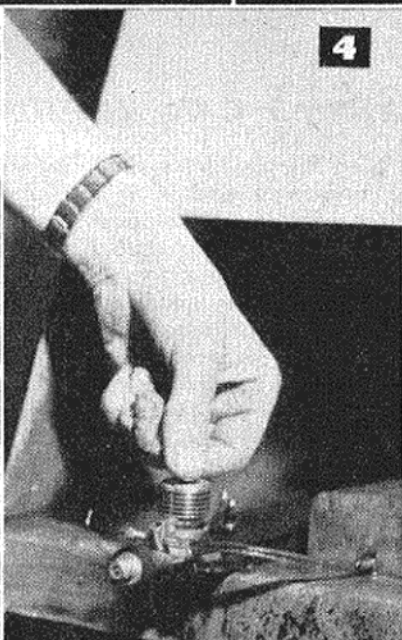
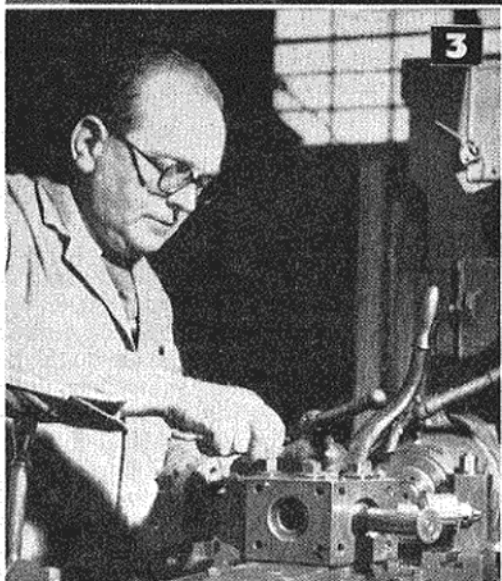
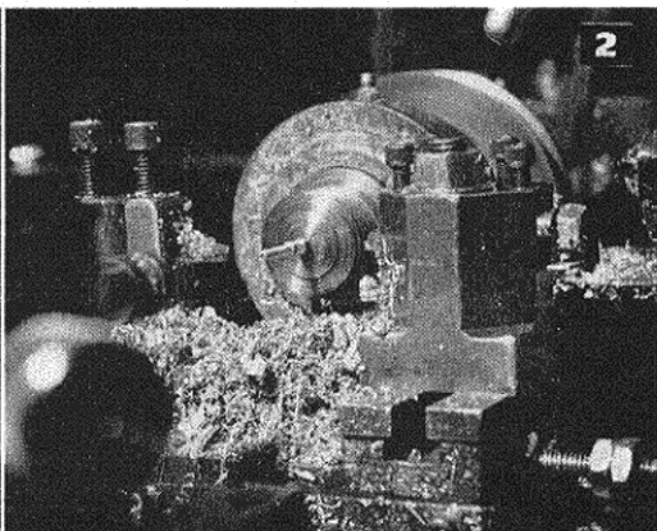
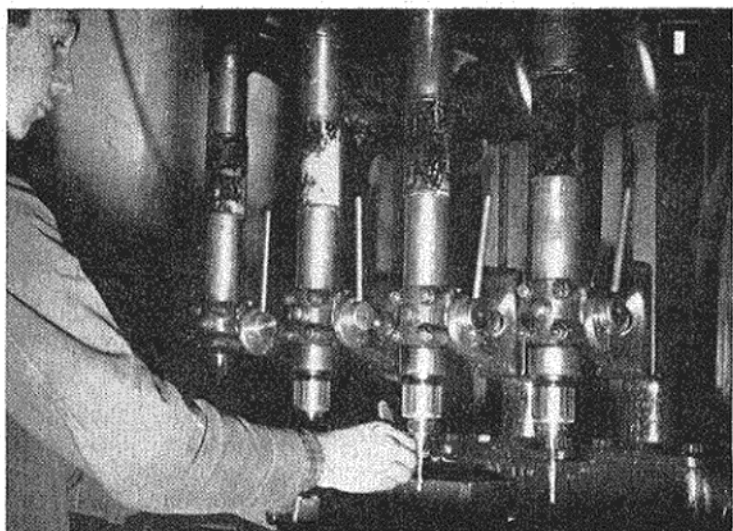
Continued on page 210



Left: Dennis Allen assembles a 3.5 motor—all engines are assembled by practical modellers.

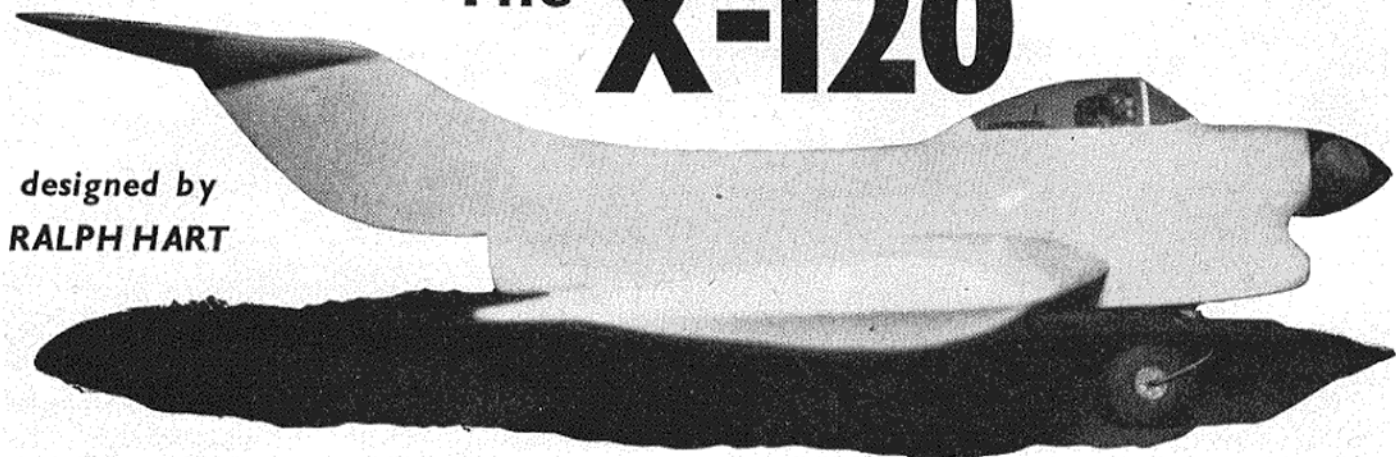
CAPTIONS TO PHOTOPAGE

1. Drilling con-rods for a 3.5. Rod is mounted in jig and the operation from left to right is—drill little end, ream little end, drill big end, ream big end.
2. A spraybar finished ready for parting off. Machine turns these out from alloy at amazing rate.
3. Dennis' partner Les Parker assembling a capstan lathe that has just been added to their machinery.
4. A prototype of the new 1.5 was run up for our benefit. Production motors will feature a blue head.
5. No prize for guessing who this is—Len Steward honing a 3.5 cylinder.
6. Brian Howard cones and finishes 3.5 pistons.
7. Turning 3.5 backplates. Operator is George Thomas.
8. West Essex member Mick Clark honing the main bearing in a 3.5 crankcase.



The X-120

designed by
RALPH HART



An unusual stunt job for 3.5–5 c.c. engines

STUNT models generally tend to follow a well defined pattern, but X-120 is a model with a difference. Let it be quite clear this difference is not in the performance, for this model will fly the stunt schedule as smoothly and as well as any more orthodox design, but on the score of looks X-120 is really eye-catchingly different.

The originals (there are four) have been variously powered with glo-plug 19s and 29s and a 9 × 6 prop has been found to give the best results.

Construction

The wing should be built first as it must be finished and covered before being installed in the fuselage. The actual construction is quite straightforward and is clearly shown on the plan, but it should be remembered that pushrod No. 1 must be soldered in place before the wing is covered.

Now for the fuselage, and here, contrary to usual practice, it is best to start at the rear and work forward. The first step is to cement the "rudder" parts, and former C together as shown on plans—allow to dry thoroughly. The motor mounts may be glued to the fuselage sides at this time. In step No. 2 the fuselage sides are cemented to former C and to the rudder portion. A small clamp may be placed at the top of C and another just above the tail pipe portion, so that the inverted V formed by C is formed from the tail pipe forward only. When dry, the temporary tail pipe former and the $\frac{1}{4}$ in. horizontal member may be added.

Step No. 3, which is the installation of formers A and B, is by far the most difficult. Before beginning this step a small clamp should again be placed at the top of former C to ease the strain there, and some arrangement should be devised for clamping the fuselage sides to A and B. I have found that two pieces of $\frac{1}{4}$ in. plywood about 5 in. square, connected by 3 in. bolts through each corner, are best for this purpose. Former B is put in place first and the fuselage sides are clamped in until they close on former A. To accomplish this the sides must be bent gradually, using a slight amount of steam if necessary. Care must be taken to get the fuselage square with the rudder. A slight warp in the fuselage to act as offset is incorporated, but be careful not to use more than shown on the plan.

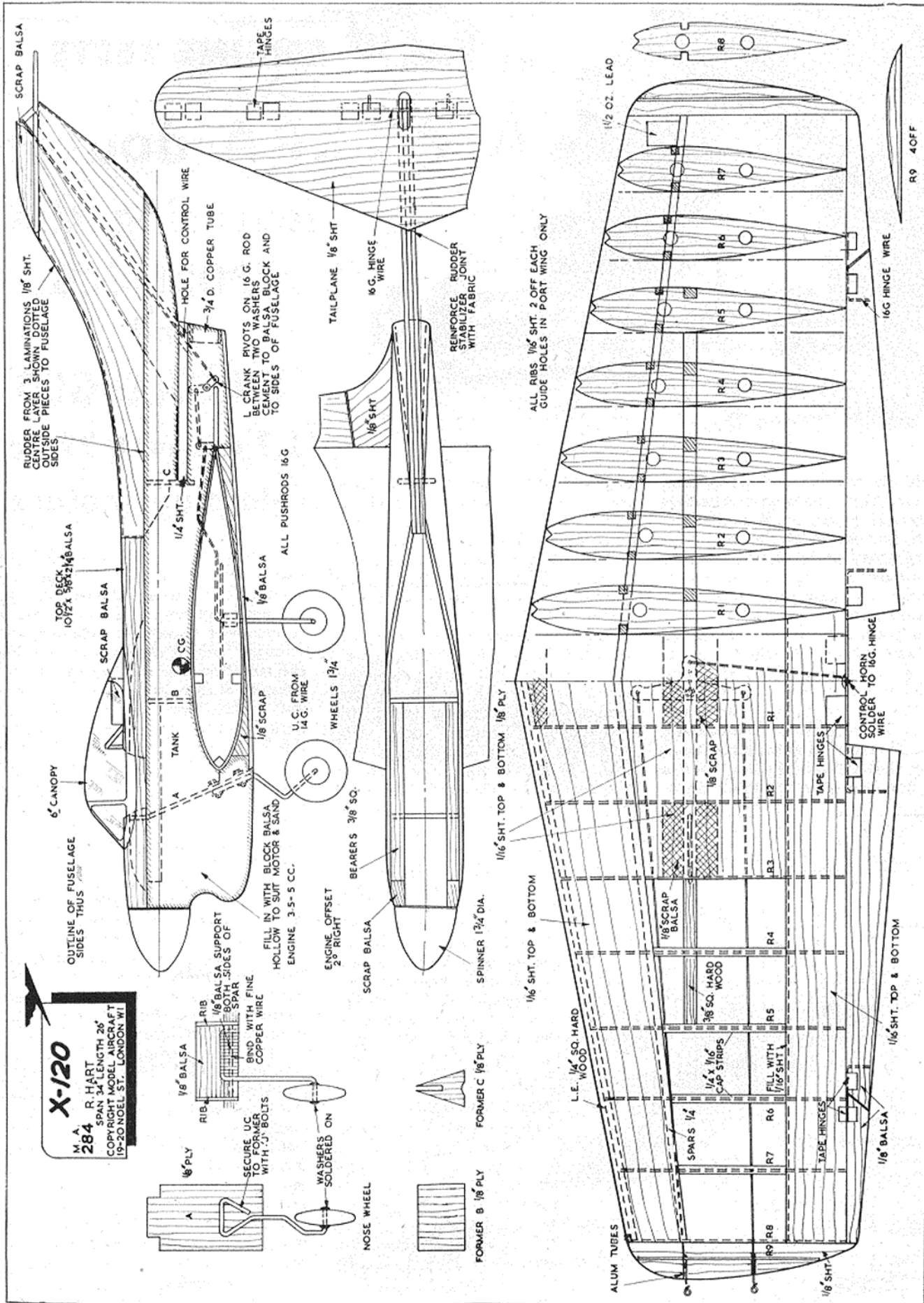
The engine should be temporarily installed next (not offset) and the mounting nuts firmly attached to the top of the motor mounts. The tank may be installed now. I use a stunt tank arranged so that both filler and vent tubes are brought through the lower firewall to avoid external openings.

The control system is unorthodox and a great deal of patience is sometimes required when installing it. Pushrod No. 3 should be linked to the elevator control-horn and the stabiliser glued in place. The L bellcrank is then installed temporarily and the rest of the control system soldered up as accurately as possible. The control system may then be adjusted by shifting the L

bellcrank. When you are satisfied with the behaviour of the control system the L bellcrank rod may be securely attached to the fuselage sides by means of balsa blocks and glue. A small amount of oil on the L bellcrank assembly is sometimes helpful.

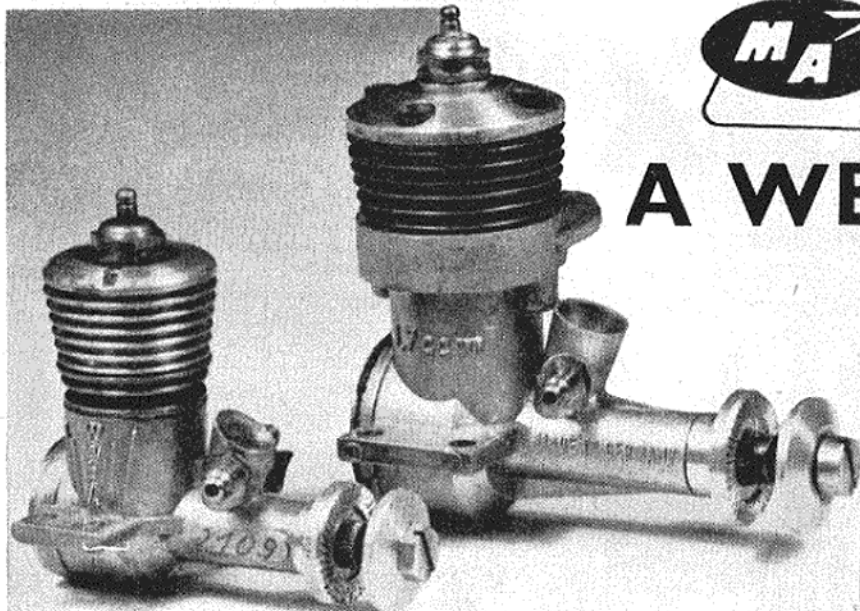
To get a good finish on this aircraft much sanding is required and it should not be neglected. After the aircraft is sanded down to the desired contours all wood surfaces should be given two coats of thin clear dope and sanded lightly with fine sandpaper after drying. A light mixture of clear dope and talcum powder should then be brushed over all wood surfaces to act as a filler, and sanded lightly. This process may be repeated if required. A heavy paste of dope and talcum powder is used to build up the rudder tailpipe section, and to fill in all other irregularities in the aircraft. This paste is very suitable as it is light and very easily sanded.

The cockpit detail should be completed next and the cockpit area doped the desired colour. The canopy is then glued on and masked as indicated. It may then be built into the body with dope-talc paste and sanded. The entire plane is then given five to seven coats of clear dope sanding lightly between coats. The nose of the plane may now be trimmed if necessary so that it is flush with the spinner plate, and the exhaust opening may also be cut (some sort of metal exhaust pipe must be used). The plane may now be doped the desired colour (spray if possible). Fuel proof the engine area carefully, giving two or three coats and the remainder of plane is then given one coat of fuel proof dope. Before flying make sure all the wheels are in line.



M.A. X-120
R. HART
SPAN 34" LENGTH 26"
COPYRIGHT MODEL AIRCRAFT
19-20 NOEL ST. LONDON W1

FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT
19-20, NOEL STREET, LONDON, W.1, 6s. 0d., POST FREE



ENGINE TESTS

A WEBRA double featuring the SPORT-GLO and PICCOLO-GLO 1.7 c.c. and 0.79 c.c. glo-plug motors

FOR about five years now, West Germany has been the largest Continental producer of model i.c. engines and much of the credit for focusing attention on German model motors must go to the Berlin firm of Bragenitz and Company with their Webra engines.

Two years ago, having previously manufactured only diesels, Bragenitz began production of three glowplug models, the 2.45 c.c. Mach-1 Glo, the 1.73 c.c. Sport-Glo and the 0.8 c.c. Piccolo-Glo. The Mach-1 Glo is, of course, a glowplug version of the well-known Mach-1 contest diesel and was featured in the M.A.

Engine Test for August, 1957. However, the Piccolo-Glo, despite its name, has only its bore and stroke dimensions to connect it with the earlier Piccolo diesel, while the Sport-Glo is an entirely fresh design quite unlike any previous Webra model.

These two latter engines, which are the subjects of this month's report, were, in fact, put into production partly as a result of the Webra company's co-operation with the well-known "Schuco" firm, who were then entering the model aircraft field. Schuco's objectives were to provide the raw beginner with simple models with which he would stand a good chance of immediate success. To this end, their C/L trainer models, the 20 in. Hegi-10 and the Hegi-20 biplane, were designed as virtually ready-finished models, requiring only nuts and bolts to assemble them, and the Piccolo-Glo and Sport-Glo were the engines chosen as the standard power-plants for them.

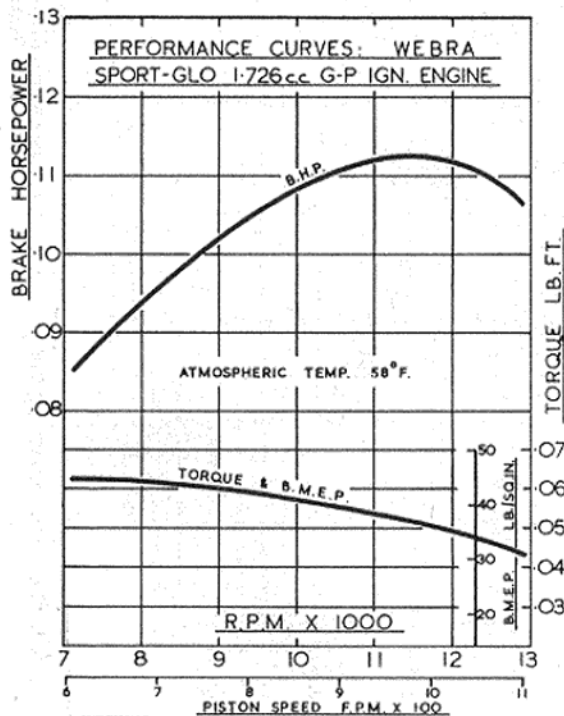
Webra Sport-Glo 1.7 c.c.

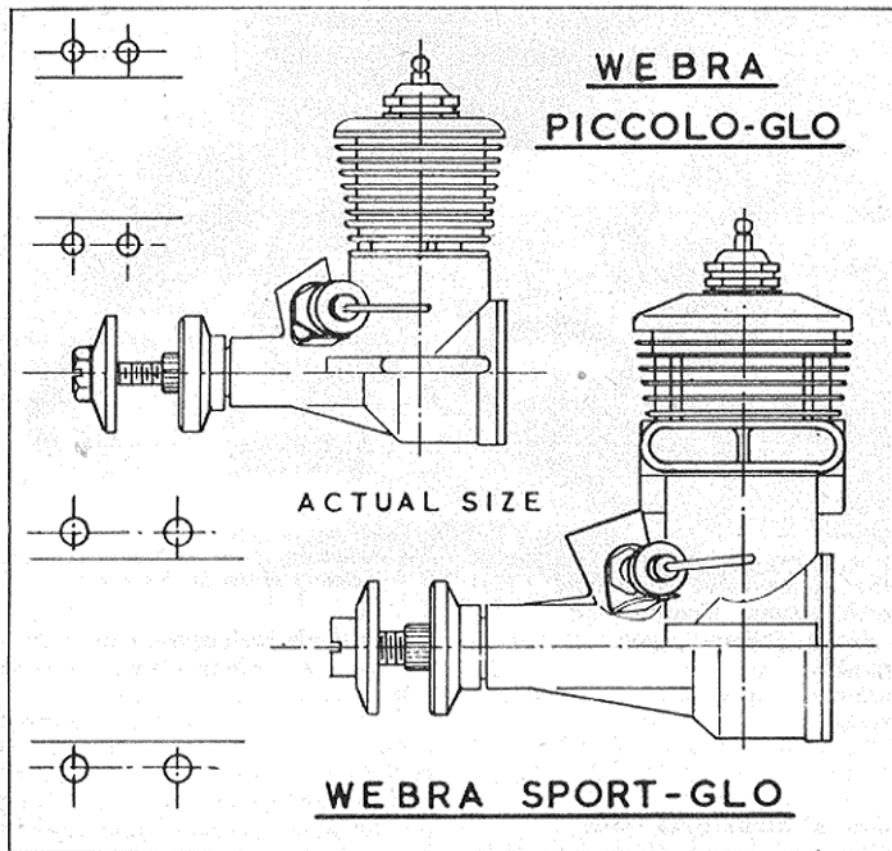
In both size and design, the Sport-Glo is somewhat non-standard. Its swept volume of 1.726 c.c., or 0.105 cu. in., puts it outside the 1.5 and 0.099 groups and its general layout and construction does not readily invite comparison with other designs.

At first sight, the Sport-Glo looks like a loop scavenged motor, on account of its wide exhaust duct on the left-hand side. In fact, it has a reverse-flow scavenged cylinder and its single stack is merely an outlet for the collector ring that surrounds the cylinder at exhaust port level. There are, in fact, two exhaust ports and, between them, two internal transfer flutes. In order, however, to provide an uninterrupted bore surface, fore and aft, for the fully-floating gudgeon-pin, the complete cylinder is rotated through 45 degrees. The exhaust period, incidentally, is approximately 125 degrees.

The cylinder is machined in one piece, complete with cooling fins and is unhardened. It is topped by a plain aluminium head having a symmetrical concave undersurface. The flat crown piston is also unhardened and is coupled to a steel connecting rod by a 3 mm. dia. unhardened gudgeon pin.

The main casting of the engine comprises crankcase, main bearing with integral carburettor intake and the lower part of the cylinder casing complete with exhaust duct. The hardened crankshaft has a 7 mm. dia. journal, 26 mm. long, a plain disc web and solid 3.5 mm. crankpin. It runs in a plain, unbushed main bearing. The induction passage through the shaft is 5 mm. dia., as is the circular valve port which provides an intake period of approximately 170 degrees. The piston skirt clears





Ignition plug used: Webra 1.5 volt glowplug as fitted.

Performance

From the first, our tests of the Sport-Glo bore out all the maker's claims for ease of starting and handling. Some engines start quickly when handled properly—i.e. when the controls are set just so and the cylinder correctly primed. But the Sport-Glo comes to life even when handled quite cluelessly. The engine starts with finger choking only: no priming through the exhaust or intake being necessary, but we also tried deliberately flooding the engine and, within a few flicks, the Sport-Glo was spluttering away, disgorging quantities of surplus fuel for a few seconds until it had cleared the excessively rich mixture and was two-stroking evenly.

The Sport-Glo is claimed to run satisfactorily on a variety of fuel mixtures, from plain 3-to-1 alcohol and castor upwards, and, for our dynamometer test, we used the formula already given which can be expected to release about 10 per cent. more power than a straight blend.

No racing engine, the Sport-Glo achieved its peak output at a modest 11,600 r.p.m., but the peak figure of 0.113 b.h.p., nothing startling on a b.h.p./litre basis, is a very useful level for a 2½ oz. engine. With the maximum torque delivered at relatively low speed, the engine continues to give a useful performance when loaded with props of up to about 9/4 size, when the speed is around 8,500 r.p.m. The most useful prop for extracting the best performance from the engine is something like an 8/3 P.A.W., which will give a static

(Continued overleaf)

the bottom edge of the exhaust port for a few degrees either side of top dead-centre but, as the ports are partially shrouded, this is unlikely to have any significance as a means of contributing supplementary air induction.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, glowplug ignition. Crankshaft type rotary-valve induction. Flat top piston, hemispherical combustion chamber and centrally located plug.

Swept Volume: 1.726 c.c. (0.105 cu. in.).

Bore: 13 mm. (0.5118 in.) Stroke: 13 mm.

Stroke/Bore Ratio: 1 : 1.

Weight: 2.5 oz.

General Structural Data

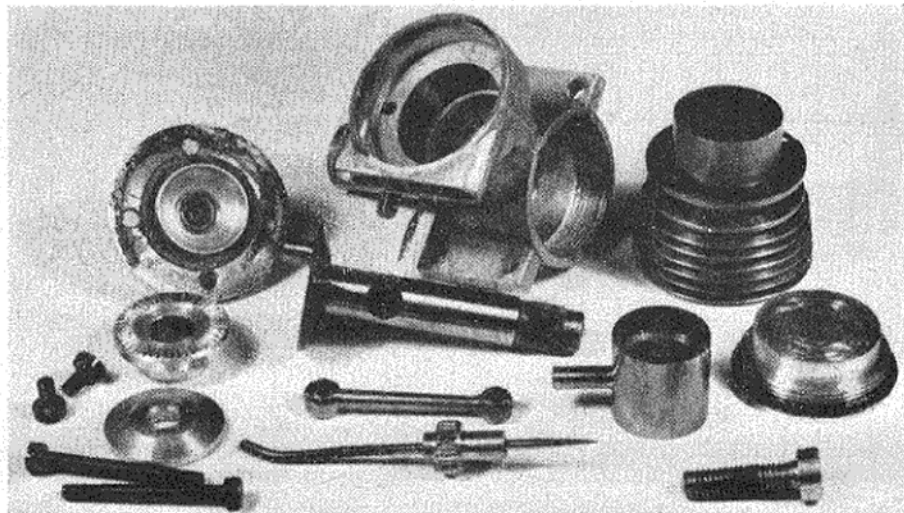
Pressure diecast aluminium alloy crankcase and main bearing unit. Hardened alloy-steel non-counter-balanced crankshaft with splined end and internal thread for alloy prop driver and retaining screw. Machined steel cylinder with integral fins. Aluminium alloy cylinder head, retained with four screws, two of which

pass through into crankcase to secure complete cylinder assembly. Lapped cast-iron piston with full-floating gudgeon pin and machined steel connecting rod. Plain, unbushed bearings throughout. Brass spraybar type needle-valve assembly with ratchet device. Beam mounting lugs.

Test Engine Data

Running time prior to test: 2 hours.

Fuel used: 15 per cent. 2-Nitropropane, 60 per cent. I.C.I. Blending Methanol, 25 per cent. Duckham's Racing Castor Oil.



An "exploded" view showing the component parts of the Sport-Glo.

r.p.m. in the region of 10,500 r.p.m.
Power/Weight Ratio (as tested):
 0.723 b.h.p./lb.
Specific Output (as tested): 65 b.h.p./
 litre.

Webra Piccolo-Glo 0.8 c.c.

The Piccolo-Glo is, in every way, different from the Sport-Glo. Of 0.8 c.c., and, therefore, belonging to the American "Half-A" class, it looks something like an Atwood and it revs like one.

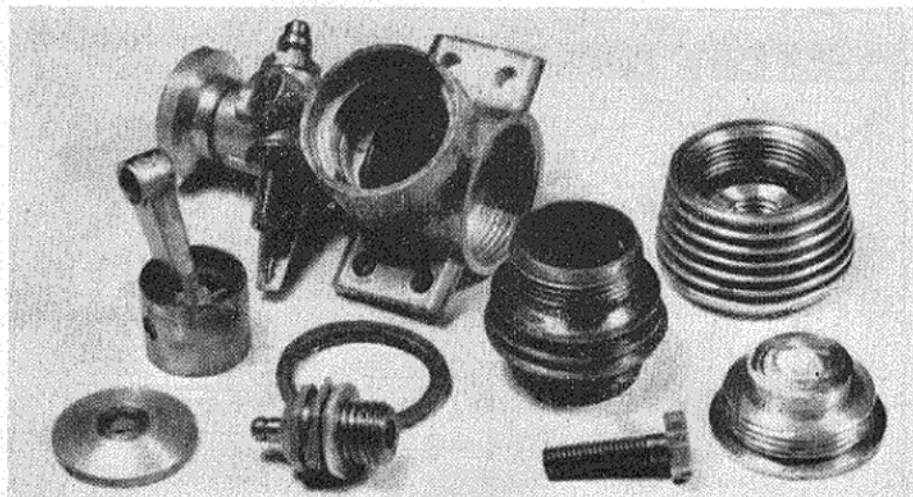
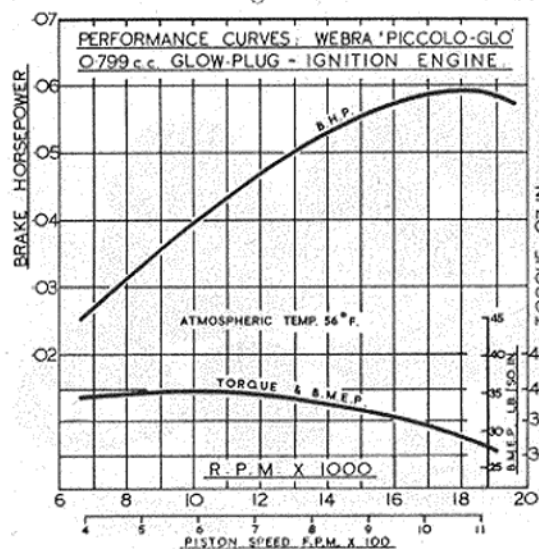
We have already said that the Piccolo-Glo bears no resemblance to its diesel namesake. This goes for its performance too. The diesel has had something of a mixed reception due to its somewhat unreliable starting characteristics and rather harsh running qualities. The Piccolo really should have had a new name, if only to dissociate it from the idiosyncracies of its predecessor.

The Piccolo-Glo is to the popular shaft-valve, reverse-flow scavenged, "Half-A" formula. Cylinder porting consists of three radial slits with three inclined circular transfer ports, on the Herkimer pattern, fed by two transfer passages between the liner and wall of the casting, into which the liner screws. A finned alloy barrel and head unit screws over the upper part of the liner. Graphited composition gaskets are used to seal the joints between the liner flange and casting and between the head and upper rim of the liner.

The complete engine is very small and compact and, as with the Sport-Glo, it features a rearwards inclined needle-valve assembly on the left side.

Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke



The component parts of the Piccolo are clearly shown in this photo.

cycle, glowplug ignition. Crankshaft type rotary-valve induction. Flat crown piston. Central plug.

Swept Volume: 0.799 c.c. (0.0475 cu. in.).

Bore: 10.5 mm. (0.4134 in.).

Stroke: 9 mm. (0.3543 in.).

Stroke/Bore Ratio: 0.857 : 1.

Weight: 1.35 oz.

General Structural Data

Pressure diecast aluminium alloy crankcase and main bearing. Hardened alloy steel non-counterbalanced crankshaft with splined end and internal thread for prop drive hub and retaining screw. Unhardened alloy steel cylinder liner screwed into crankcase. Screw-on aluminium alloy finned cylinder barrel head. Cast-iron piston with pressed in gudgeon-pin and diecast aluminium alloy connecting rod. Plain bearings throughout. Brass spraybar type needle-valve with ratchet device. Beam mounting lugs.

Test Engine Data

Running time prior to test: 2 hours.

Fuel used: 20 per cent. Nitromethane, 55 per cent. I.C.I. Blending Methanol, 25 per cent. Duckhams Racing Castor-oil.

Ignition plug used: Webra 1.5 volt glowplug as fitted.

Performance

All very small glowplug engines develop relatively low b.m.e.p. and usually rely on very high peak revolutions to achieve a useful power output. The Piccolo-Glo is no exception to this theme and delivers its peak output at quite

astonishingly high revs—some 18,000 r.p.m. in fact, where a b.h.p. of 0.059 was recorded on our test.

To achieve these speeds on a prop, a diameter of no more than 5 in. is called for, yet the engine can still be hand started quite easily. To round off the tests, we made a number of runs of five minutes duration at 17,500 r.p.m. The engine held this speed steadily and seemed perfectly happy, appearing no worse for its experience on being stripped down for inspection.

Starting is apt to be a little slow when the engine is cold and, in this respect, it is not as good as the Sport-Glo, but handling characteristics are otherwise quite good. In general, the performance is comparable with the well-known American engines of this capacity group.

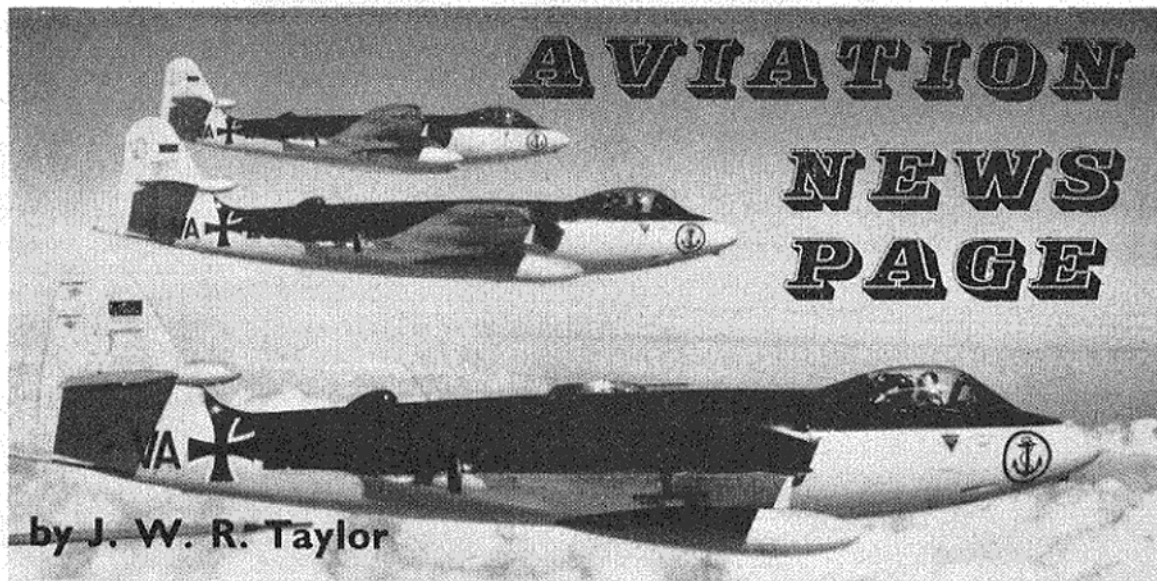
Power/Weight Ratio (as tested):
 0.70 b.h.p./lb.

Specific Output (as tested): 75 b.h.p./
 litre.

Watch out for
 next month's
 Special double test
 featuring two new
 British motors—
 the FROG 100 Mk II
 and 150 Mk II R

AVIATION NEWS PAGE

These three Sea Hawks, in German Naval Air Arm colours, pose for the camera while on air test before being handed over to their new owners.



by J. W. R. Taylor

PLANE OF THE YEAR is likely to be the North American X-15, shown for the first time in this officially-released drawing (below). The blister canopy is somewhat surprising on an aircraft that will fly at ballistic missile speeds; but the rest of the airframe is much as expected.

Newest feature is the wedge-section of the dorsal and ventral tail-fins, which have a square trailing-edge no less than 12 in. wide. Small split rudders are inset in both fins, presumably acting also as air-brakes during flight and the landing approach. The wing is reported to have a maximum thickness of not much more than 2 in. (it spans 22 ft.) and is fitted with quite large inset ailerons. A one-piece all-moving tailplane completes the conventional controls; to which are added rocket jets in both wings, the nose and tail to give some measure of control during high-altitude flight, above the effective atmosphere.

The fuselage of the X-15 is virtually an integral fuel tank for the ammonia and liquid oxygen propellants, from the cockpit aft to the fins. Then comes the

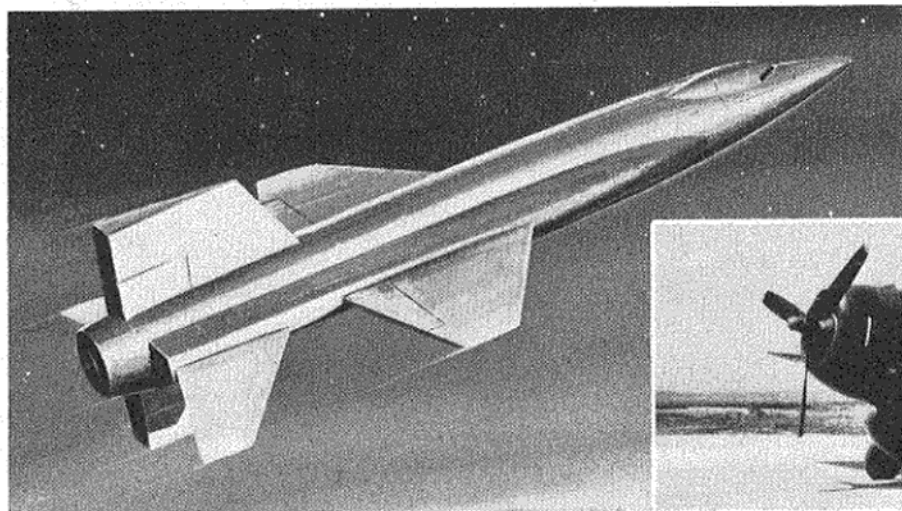
single-chamber Reaction Motors rocket rated at 60-70,000 lb. thrust according to height. This is more than three times as powerful as the Curtiss-Wright engine that pushed the Bell X-2 to 2,060 m.p.h. Finally, there are wedge-shape fairings on each side of the fuselage to house control-rods and pipelines and sort out the airflow around the wing-to-fuselage junctures.

Initially, the 33,000 lb. X-15 will be launched at around 40,000 ft. from a B-52 *Stratofortress* and will be flown to a "moderate" Mach 2-3 by North American test pilot Scott Crossfield. After that, Captain Iven Kincheloe of the U.S.A.F. and Joseph Walker of the N.A.C.A. will open it out in tests aimed at Mach 5-7 and heights of 50-100 miles. If all goes well—which means mainly that the aircraft re-enters the atmosphere without burning up—the X-15 may eventually be fired vertically some 20 miles on a large booster-rocket, then carry on under its own power and arch over into a satellite orbit. All of which sounds like a lot of fun for Messrs. Crossfield, Kincheloe and Walker.

SUBSONIC FIGHTERS may seem tame after the X-15, but in choosing the *Sea Hawk* as its standard fighter the German Naval Air Arm is getting an aircraft that can outmanoeuvre and outfight almost any contemporary ship-board interceptor at height. The photograph above shows a batch of three Armstrong Whitworth-built *Sea Hawks* in still-unfamiliar insignia. The German Mk.100 differs from the Royal Navy's F.(G.A.) Mk.6 in having American radio, provision for four underwing tanks and increased fin and rudder area. A total of 68 Mk.100s and Mk.101s is being supplied, the latter version with additional electronic equipment.



STILL NAVAL, but slower and perhaps more interesting, is this trim Grumman TBM-3-W *Avenger* (below) of the French Navy. One of the few machines of this type still in first-line service, it has been extensively modified, with under-fuselage early-warning radar scanner, blanked-off rear cockpit, underbelly gun position deleted, and sizeable auxiliary fins at each tailplane tip. With wingtip pitot, an unusual aerial atop the fin, arrester gear and sundry other knobs, bumps and wotzits thrown in, the result is a solid-modeller's delight.





**AVIATION
NEWSPAGE**

**Plane of
the month**

The Grumman AG-CAT

THE family of "cats" born in Grumman's Long Island factory over the past 18 years have been successively faster and more formidable, advancing from the 325 m.p.h. six-gun *Wildcat* of 1940 to the 900 m.p.h. missile-armed *Tiger* of 1958. News that the company's latest "cat" is a biplane with a top speed of 110 m.p.h. will, therefore, come as a shock to many people.

Be that as it may, the *Ag-Cat* is certainly good business. For years the mainstay of U.S. and Canadian aerial crop-spraying and dusting firms has been the veteran ex-military Stearman 75 (Boeing *Kaydet*) trainer biplane, modified to carry a chemical hopper in its front cockpit and either spray-bars under its wings or a dust-spreader under its fuselage. All kinds of slick, streamlined successors have been produced by U.S. designers, but the Stearman is as reluctant to be replaced as the *Dakota*, and for the same reason. Its blend of low purchase price, easy maintenance and plodding old-world efficiency enable it to make money while the replacements are still paying off the hire purchase instalments.

Companies like National Aircraft have done well financially by building new sets of all-metal wings to improve the safety and performance of existing Stearmans; but the market is obviously wide open to any big manufacturer who can produce a "1958-model Stearman" that will offer a sufficiently-high performance, agriculture-wise, to offset its higher initial cost. Realising this, Grumman have designed and built the *Ag-Cat*.

Before doing so, they carried out the inevitable market survey, including no doubt an analysis of the causes of the fairly frequent accidents to farm-planes. It was soon apparent that the best way of getting sufficient wing area for a low operating speed, without excessive wing span, was with a biplane configuration. Lest this should seem heresy, it may be worth recalling that one of the original Fairey designs to meet the *Gannet* Specification GR17/45 was a biplane, for the same basic reason. The Royal Navy might have lost face had it ordered such a shape in the 1950s, but the crop-dusters have no such qualms and like the familiar look of the *Ag-Cat*.

As a start, its configuration gives it a stalling speed of only 42 m.p.h., enables it to take off with a full load in only

675 ft. and to make a continuous 1.5 g turn at dusting speed, again with a full hopper.

Its 1,000 lb. load in a 29 cu. ft. (217 U.S. gallon) hopper is about equal to that of a Stearman of similar power; but it offers also all the advantages of up-to-the-minute techniques of design and construction. The upper and lower wings are interchangeable, and are torsionally-stiffened, with a minimum of external wires, which greatly reduces rigging time.

The buyer has the choice of any one of more than half-a-dozen new or reconditioned engines in the 200-300 h.p. category, such as the 220 h.p. Continental R-670, 225 h.p. Lycoming R-680-B4, 300 h.p. Lycoming R-680-E3 or 245 h.p. Jacobs R-755—all proven power plants that can take the kind of treatment they get in quick-turnround agricultural work.

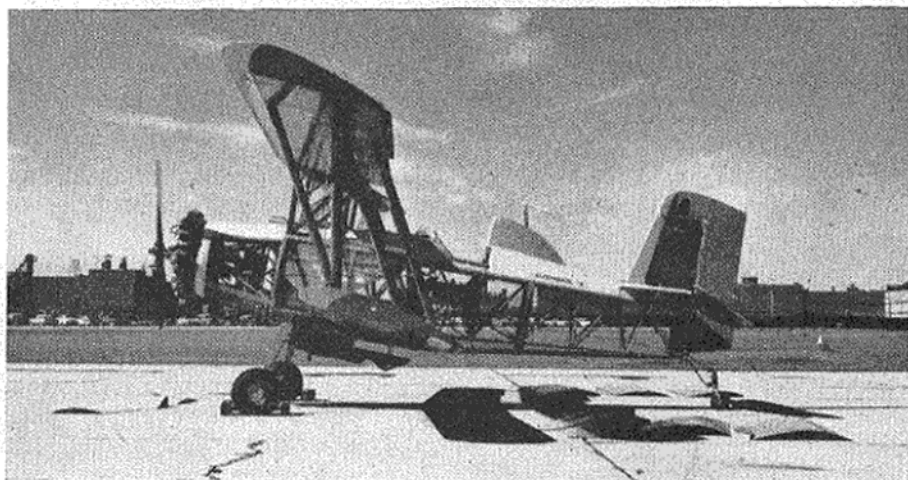
Everything possible has been done to make the pilot's job easier and more permanent. He sits high, in an open cockpit fitted with strong shoulder-harness and with a sturdy overturn pylon built into his head fairing. The cockpit is well padded, and the A.S.I. and engine tachometer are mounted on a separate panel forward of the cockpit, in the pilot's line-of-sight, so that he does not have to divert his glance inside the cockpit whilst spraying.

To ease maintenance, all four ailerons are interchangeable, the whole fuselage is covered with quickly removable panels, all metal parts are corrosion-proofed, and spring steel undercarriage legs are fitted which require no servicing. Changeover from dusting to spraying is described as instantaneous.

Already in production, the *Ag-Cat* will be available to customers this summer. Meanwhile, the two prototypes have been flown by more than 130 "ag" pilots, whose unanimous opinion is that Grumman's latest fighter—of crop-killing pests—is the cat's whiskers.

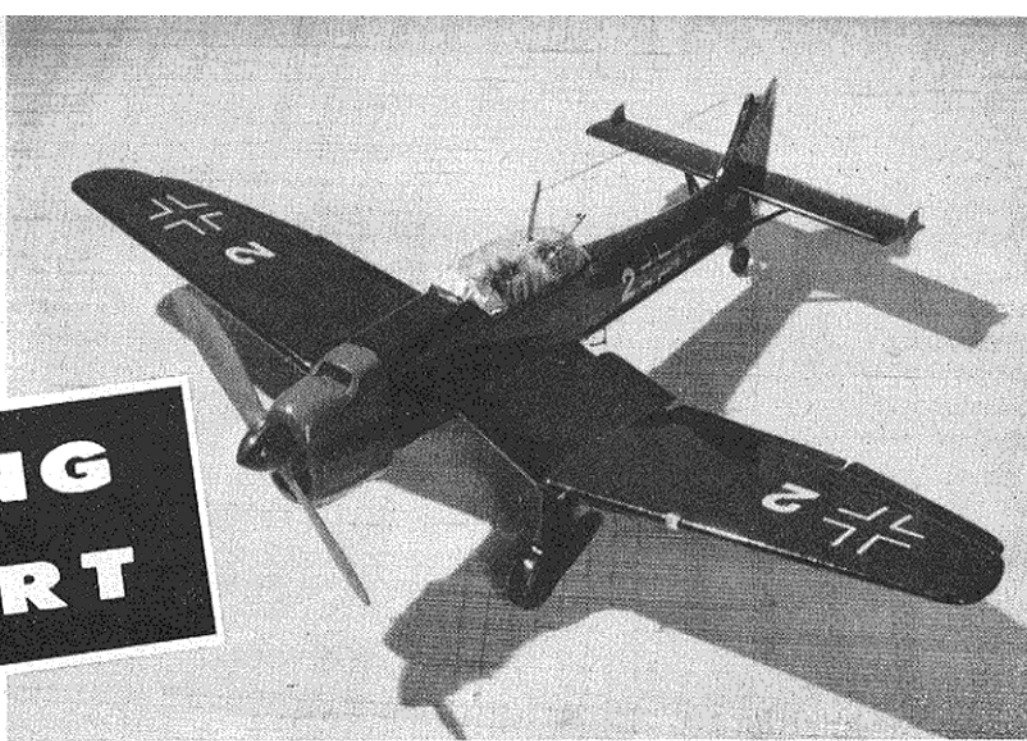
Span: 35 ft. 8 in. Length: 24 ft. 8 in. Empty weight: 2,179 lb. Loaded weight: 3,600 lb. Max. speed: 110 m.p.h. Stalling speed: 42 m.p.h.

The "bare bones" of the *Ag-Cat*, with everything really "get-attable."



Catch up on the latest world news of models and modellers in M.A.'s—

ROVING REPORT



GUENTHER BODEMANN, the former Webra engine designer, has recently joined Hoernlein, the Bavarian concern which makes the Taifun engines for the Johannes Graupner organisation. This teaming up of two of Germany's most prolific and successful engine designers suggests that we may expect to see some interesting new engines under the Graupner label later on.

Graupners, incidentally, have introduced a lot of new model equipment for 1958. There is a new crystal controlled transmitter and a transistorised receiver for 400 cycles modulation on 27.12 Mc/s. These are known, respectively, as the *Bellaphon* and *Mikroton*. There is also a kit, made under licence, of Harold deBolt's *Live Wire Trainer* R/C model. This is slightly modified from deBolt's original and is renamed *Satellit*. Graupner's latest model catalogue is quite something; 130 pages approximately 12 x 8 in. and nearly 400 illustrations, it lists engines, kits, radio-control, balsa, fuels, props, wheels, books, tools, dopes, accessories—just about everything the modeller is ever likely to need, in fact.

* * *

Peter Weaver, former Australian C/L stunt champion, who also amuses himself with full-scale light aircraft, tells an amusing story of an air pageant which was organised by the local flying club in aid of the Kingsford Smith Memorial Fund. "You will be interested to know that

we broke the sound barrier in a *Tiger Moth*, complete with bangs and all. This was done by exploding two plugs of dynamite at the critical moment. The gent who pressed the plunger to set off this awe-inspiring explosion was hooked into the public address system per a two-way radio and also gave a commentary against a background of aircraft noises purporting to come from the aircraft itself. It was most impressive: "I'm at Mach 0.95 . . . slight buffeting . . . Mach 0.98 . . . buffeting badly . . . we're through at Mach 1! . . . BOOM!! People believed it . . ."

* * *

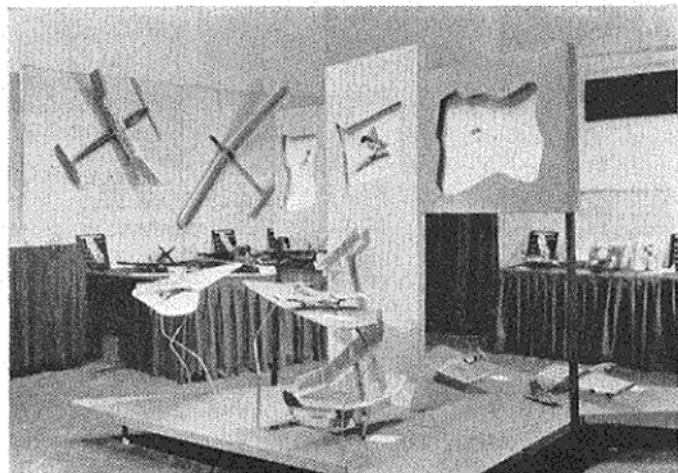
The American Testor Corporation has a new glowplug, the Testor Golden-Glo. It gets its name from the fact that it is actually gold-plated. The Testor Corporation states that this aids combustion by the increased

reflectivity of the inner surface. The plug is first plated with chromium and then with 24-carat gold. A ceramic insulation is used which is fused to the centre post and the body of the plug. According to Testors, the Golden-Glo plug, which will be marketed in four types to suit all engines, offers increased performance, longer life and improved resistance to "drowning out" in stunt flying.

* * *

Special claims are also made for another new American glowplug: this time Irwin Ohlsson's "Gold Seal FR" plug. "FR" stands for "Full Range," the claim being that the plug will continue to support combustion under very rich mixture and cool running conditions. This quality is becoming increasingly important nowadays: multi-channel R/C enthusiasts want to fit throttling devices

A corner of the national model exhibition organised by the Casalecchio Model Group at Bologna, Italy. Some excellent models were on view, including a number of highly detailed scale C/L types, one of which, a Fox 35 powered Ju.87 Stuka built by Richard Werner, of Verona, is shown in our heading photo.





Above. Probably the most lavish catalogue ever issued by a model firm is this comprehensive publication by the Johannes Graupner company.

Top left. An unusual shape but handy: the new Graupner Bellaphon transmitter. Purchasers have a choice of a 6-volt transformer model or a dry battery version.

Left. Guenther Bodemann, designer of the Mach-1 and other Webra engines, has now joined forces with Hoernlein, the Taifun engine manufacturer.



Construction is of sheet balsa throughout and is very simple. A single surfaced sheet balsa wing is used.

* * *

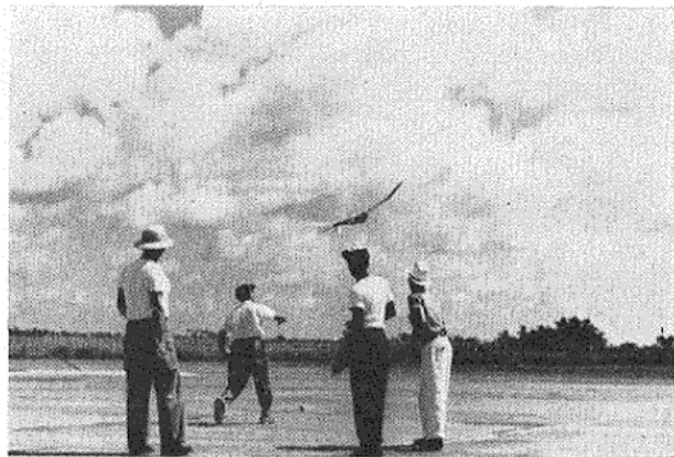
and stunt enthusiasts want automatic switching from four-stroking to two-stroking and back again. In both cases there is a danger of dousing the plug element. One solution (with multi R/C) has been to carry a 1½-volt battery pack that could be automatically switched on to boost the plug. Ohlsson's new plug is said to render unnecessary any such devices.

* * *

In last month's issue we mentioned American Ken Willard's 24 in., 9 oz. R/C job and thought it must be the world's smallest, but we now learn that his fellow countryman Bob Coon, has gone one better, for his *Guided Mile* is only 21 in. span and 8 oz. all up weight. It is powered by a Cox Pee-Wee motor and is fitted with one of the new Deltron R.109 miniature transistor receivers, which needs only a single 22½-volt hearing-aid battery.

Big multi-channel "luxury" R/C kits have been appearing in the U.S. recently. Howard Bonner's *Smog-Hog*, for example, has been kitted by Veco and is offered at \$27.95 (£10) which makes it just about the most expensive model aircraft kit on the market at the present time. The

Cuba. All eyes on the model as F/F exponent Valladares launches his Stan Hill designed 'Amazoom.'



deBolt Model Engineering Company have a kit of Harold deBolt's *Custom Live-Wire* biplane—the model that came within half a point of winning the 1957 U.S. Nationals—at \$21.95 (approx. £7 17s. od.). Throttle equipped engines to go with these are available in the shape of the K & B Torpedo 35RC at \$22.95 (£8 4s. od.) and the Veco 35RC at \$19.95 (£7 2s. 6d.). Both engines have carburettor throttle control only—i.e., without a coupled exhaust valve.

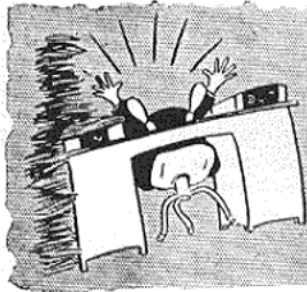
* * *

In Japan, Yasuo Oishi, who, at the beginning of this year left his position as export manager with the Ogawa Model Manufacturing Company (O.S.), has formed his own model firm, Oishi & Co. Ltd. By an arrangement with the O.S. concern, Oishi will now take over the distribution and export of many materials and accessories previously available from O.S. whose present facilities are fully occupied with the production of Max engines and Minitron radio equipment. Among the many interesting supplies available are a clockwork F/F timer with built-in cut-off which is said to weigh only 0.4 oz., a motorised R/C actuator, R/C test meters, various model boat accessories and several types of covering materials, including silks of 0.33 oz. and 0.53 oz. weight per yard.

* * *

We learn that the MVVS model research centre at Brno, Czechoslovakia, has engaged four more employees and is now planning to make some model engines on a production basis. Only a few hundred engines per year will be built, beginning with the newly developed MVVS 2.5 Diesel which was first

(Continued on page 210)



LETTERS

Pylonius Pilloried

DEAR SIR,—Having read your magazine for over two years now, I would like to pass comment on the monthly attempts at humour by "Pylonius." I realise that the poor fellow has to produce a monthly page of witty and pointed comment, a most formidable job, but lately it seems to me the remarks are rather more barbed than pointed. He attacks, with thinly disguised sarcasm, the "vintage scale" model fan, the C/L combat boys, the theorist types and even the model railway enthusiast. Very few branches of aeromodelling have escaped disparaging comment in the past and I begin to wonder just what kind of model aircraft (if any) he does find worthwhile. So, please, "Pylonius," don't be a "Topical Twisted" boy; give us more genuinely humorous articles and less vitriol or I for one will regard your work more fittingly signed "Boloneyus."

Yours faithfully,
A. M. MOORE.
Harrow, Middx.

U.S. stunt comments

DEAR SIR,—Upon reading the comments by your leading stunt men in England I was, shall we say, excited into writing to you.

Let's take the comments one by one: (1) Mac Grimmett really hit the "nail on the head." This last year found us all working hard to try to master the new pattern. In short, the new pattern gave precision acrobatics a tremendous boost over here.

(2) Dave Platt is absolutely correct in his summation that "models will now have to be specially built for stunt." However, it is my opinion, after experimenting with a number of your engines (Oliver 2.5, Frog 2.5, A.M. 3.5), that an extremely high level can be achieved and maintained with the 2.5 to 3.5 c.c. diesel.

(3) Pete Russell—I have all respect for Mr. Russell's opinion; however, his comment of "nothing offends the eye of the genuine aviation enthusiast, etc.," leads me to believe he has not seen all of the so-called "American type models," which are supposedly over-flapped and over-winged. I, too, am strongly against the type of model which seems to flip or flop around a corner. When I am judging I will whack a scoring card soundly for such a corner. The idea in introducing the new manoeuvres was not just to make the pattern hard to fly,

but to stimulate better design. For it is possible to execute a 120 degree turn smoothly like a real aircraft would do. And do it they can, for I once watched a Chance-Vought *Cutlass* perform a triangular loop. Also, four-leaf clovers are not unheard of in full-size stunting. In short, the idea was not to actually perform a so-called perfect pattern, but to try to perform one.

(4) Dave Chizlett disturbed me the most with his decision to quit modelling because of the cost of American engines, fuel, etc.

I repeat that the 2.5 to 3.5 c.c. diesels are capable of performing the new pattern consistently. The Oliver Tiger 2.5 c.c., modified or not, is the finest engine made in the world today. I have one in one of my *Flite Streak* designs (normally powered by super hot 35s) which weighs 28 oz. It will do all of the new pattern plus many more with ease. I plan to build a full-size *Nobler* for this fine jewel and I will bet the price of ten American 35s that it will do everything desired, including square four-leaf clovers consecutively. I wouldn't recommend a model of this size for contest work, but one of about 400 to 450 sq. in. should do nicely.

As to the fuel Mr. Chizlett states will require nitromethane, etc., Mr. Bill Cummings (Nat. Snr. American stunt champ.) and myself have used nothing more than three-parts methanol to one-part de-gummed castor oil for our flying. The cost of this fuel is about 19s. per gallon over here (\$2.50).

In short, the British manufacturers are making motors comparable to the Veco 19—the Oliver, Frog, and A.M. 3.5 will pull a much heavier load than any American 19. Liking the larger model, I would use a 29 diesel if a good one were available.

(5) I fail to see where Gig Eifflander gets his "ton-and-a-half" of wing weight unless he's just speaking in terms of pure size.

It seems he has misinterpreted the intention of the appearance points, i.e. design, realism, finish, detail. The "design" points were meant to differentiate between the profile model and a well proportioned cowled model, or the "Barndoor" wing from the tapered or elliptical planform. The details points were meant to influence modellers toward such things as faired landing gear struts, hidden hinges, neat colour schemes, etc. In short, these were included to bridge the gap between the other points of judging. Any modeller capable of qualifying as a judge should be able to judge these points.

As for the subject of judges, we, too,

have our problems. The soundest cure for this is to "train" judges before the meet. A contestant should learn to "fly for the judges," positioning manoeuvres so that the judge finds it easy to recognise. If a judge cannot recognise a manoeuvre he should simply be instructed to score minimum points. It only takes one or two occurrences like this to get a flyer to "give the judges a break." A few years ago, over here, the idea was to fly it fast so that the judges could not see the manoeuvres. Needless to say, times have changed.

I do not mean these comments to seem obnoxious, but merely hope to clear up points that could hurt precision acrobatics throughout the world.

In closing, may I wish all Britain a happy and harmonious stunt season.

Yours faithfully,
GEORGE M. ALDRICH.

Tulsa, U.S.A.

New rules for T/R

DEAR SIR,—I have for some time been considering the present team-racing rules, and have set down one or two suggested modifications—I wonder what other T/R fans think?

(1) I suggest that we scrap our present class "A" T/R rules and adopt the international class in its place—a move that I think is long overdue.

(2) I suggest that we increase the class "B" T/R wing area to a total of 210 sq. in. (wing and tail). These alterations would, I think, improve the airframe and aerodynamic design of our racers.

The reduction in wing loading will give improvements all round in the flying qualities whilst not greatly affecting the performance.

(3) I suggest that scale team-racing should be introduced with two classes: Class 1—aircraft built before 1925; Class 2—aircraft built after 1925; maximum engine capacity of 3.5 c.c.; lines to be 46 ft. 8 in. long; scale to be 1 in. to 1 ft.; engines to be completely cowled; tank to be 15 c.c.; heats over 5 miles, finals over 10 miles; general S.M.A.E. rules to apply.

These simple rules should bring forth a crop of scale models of the world's best fighter and racing planes.

There are a good many published plans of suitable aircraft in this scale which can be slightly modified to suit.

The only pity is that these rules will debar those beautiful biplanes built since 1922.

Personally, I think that these rules will be sufficient and will provide a spectacle which would thrill even the anti-C/L fans.

Yours faithfully,
S. ROBINSON.
Hextable, Kent.

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.

OVER THE COUNTER



A BEGINNER'S rubber model with a unique line in fuselages is the latest from **Verons**. Called the *Nimrod*, it presents an unusual but successful combination of old and new constructional techniques. Without doubt, the most interesting feature is the fuselage—two half shells, spindle moulded from balsa, which when cemented together form a tubular stick which is light, extremely strong and is, of course, completed in a fraction of the time it would take to build a normal fuselage. There is also the great advantage that although this is a "stick" model the rubber is enclosed, not left flapping in the breeze to collect harmful grit.

The wing is pylon mounted, but here again normal practice is avoided

as the pylon is cemented to the wing and is attached to the fuselage with rubber bands, a method that makes for easy adjustment of the c.g. position. Construction of the wing and tail follows the orthodox, pin-down-on-plan procedure, and this, together with the rest of the assembly, is perfectly explained by the more than adequate plan and separate building instruction leaflet.

The *Nimrod* kit costs 18s. 9d. which, at first glance, might seem rather expensive. However, the contents are very comprehensive and include, in addition to the fuselage parts already mentioned, finish turned nose and tail plugs, a finished balsa propeller, shaped wire parts, rubber, die cut ribs (although we would have wished for greater accuracy

in the cutting of the spar slots), semi-shaped pylon, and an ample supply of strip, tissue, etc. Following usual practice the kit is dry, i.e. dope, cement and tissue paste must be bought as extras.

This 28-in. wingspan design can confidently be recommended to beginners who want a model to fly, not just as an ornament.

* * *

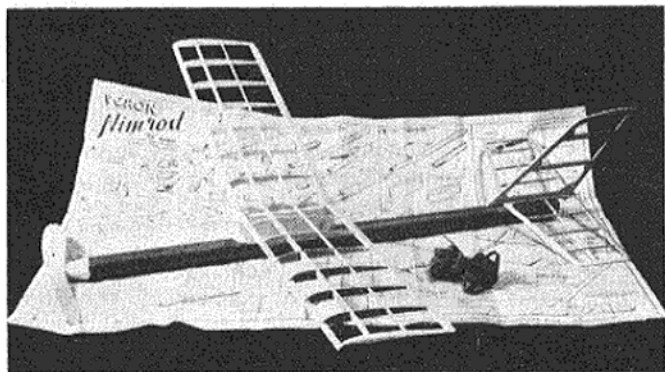
Speed and, to a lesser extent, team race fliers have been loud in their demand for speed pans, so they will be pleased to know that from now on these items will be available "over the counter" from any model shop. **Skyleada's** have produced two sizes of pan which between them should accommodate any engine of up to 5 c.c. capacity, the smaller pan being 10 $\frac{3}{8}$ in. length \times 1 $\frac{7}{16}$ in. at its widest point, while the larger is 12 $\frac{3}{4}$ in. \times 1 $\frac{11}{16}$ in.

Sand cast in aluminium, they require a fair amount of hand finishing but this means that there is plenty of metal which can be left at the points of greatest stress and also the engine lugs are of ample size to accommodate any motor. Anyway, at the cheap price of 5s. 6d. and 7s. 6d. each respectively, no one can complain at having to do some work.

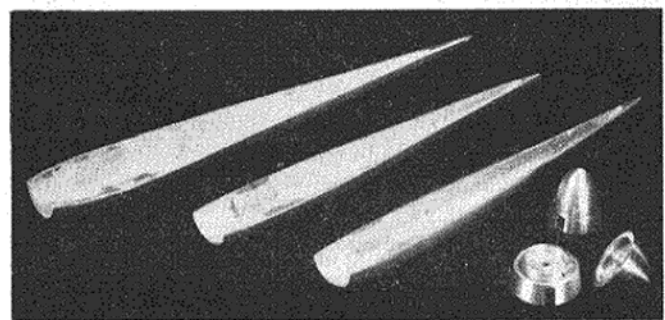
Also from Skyleada's and complementary to the above are their new metal spinners. Of the well proven and popular screw-on type, they are of 1 $\frac{1}{4}$ in. and 1 $\frac{1}{2}$ in. dia. and are again quite cheap at 6s. and 7s. 11d. each respectively.

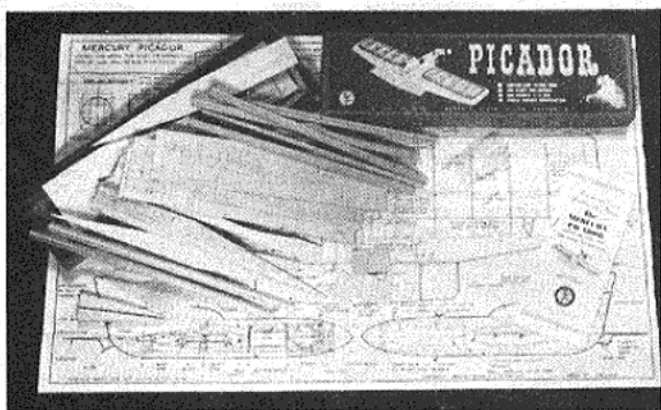
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Although the rules have been in force for some time, $\frac{1}{2}$ A team racing has never really caught on—yet.



Left: Our partially completed Veron *Nimrod*. Lower left: The new Skyleada speed-pans and spinners. Below: A selection of the latest Frog plastic kits.





However, several kit manufacturers are turning their thoughts to this field and with at least two popularly priced, hot, 1½ motors due any time now, there should be rapidly increasing interest in these small racers. The **Mercury** ½A Team Racer is well on the way, and should be in the shops before the season is too far advanced, though before this appears a new glider will be out. This is called the *Swan*, and is a 42-in. wingspan lightweight for modellers who are beyond pure beginners' models but not yet ready to tackle the most advanced designs. Price will be approx. 12s. 6d.

We have just received a kit of the *Picador*, the 24-in. span stunt/combat wing for 1-1½ c.c. engines. This is a smaller version of the well-known *Matador* and sells at 19s. 6d. Needless to say, the fully detailed plan and separate building instructions, together with high grade components and accurately cut balsa, are to the usual Mercury standard—nuff said!

* * *

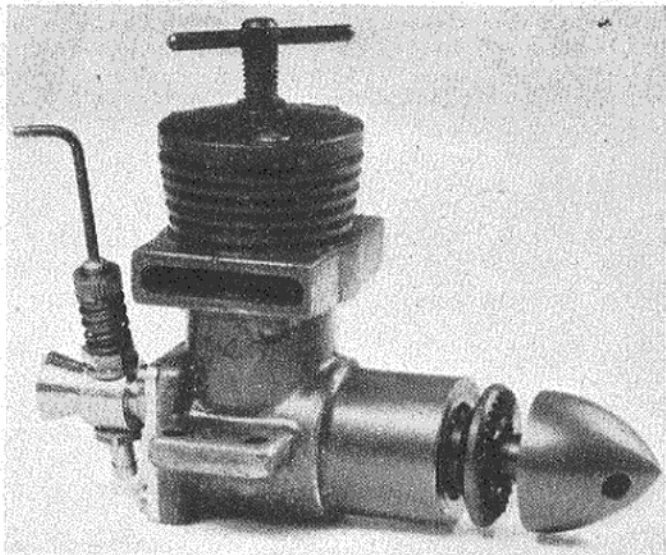
The long anticipated **Allen-Mercury** 1.5 c.c. motor will be on sale any day now. It is similar in appearance to the well known A.M.10 and at the strongly competitive price of 59s. 8d. (inc. P.T.) it could easily rival the popularity of its stablemate.

* * *

A selection of the newest **Frog** plastic kits is shown in the accompanying photograph and we need only say that they are all to the accepted Frog standard and there can be no better recommendation.

Two new engines from Frog's are due out this month, the 1 c.c. "100" Mk.11, which was first seen at the Tri-ang Trade Fair, and

Above: A new Mercury stunt/combat model—the Picador. Right: The new 1.5 c.c. E.D.



will be sold in two forms—at 65s. 4d. complete with propeller, spinner and tank, or "stripped" at 55s.—and a new 1.5 c.c. This latter engine, to be known as the "150" Mk.11.R., will sell at the same price as the existing "150," namely 55s. Both these motors come into the "hot competition" category, though remaining quite docile to handle, and we predict a very successful future for them.

Designed around the new engines, but, of course, equally suitable for the existing 1.5s, are two new C/L models. The first out will be a ½A team racer, the prototype of which has been regularly doing 73+ m.p.h., for 58 laps on a 7 x 4 nylon prop (power 150 Mk.11.R.), and this will be followed by a flapped stunt model. We have flown the prototype of this latter design, and it is a real joy to fly, performing all manoeuvres with ease, in fact, the only factor limiting performance is the pilot.

* * *

The Cox Engine Company have really got something new with their Pee Wee engine, not only the design and construction, but in the way it is displayed. Each is sealed in a moulded plastic capsule and mounted on a card with the instructions printed in book form on the back. Six go to make up a full card and all the retailer has to do when he makes a sale is tear one off!

How Cox sell their Pee Wee engine. Sealed in moulded plastic capsules mounted on card, they are torn off by the retailer like postage stamps!

Henry J. Nicholls has arranged a limited import of these motors, so if any readers want one "torn off a strip" for them at approx. 52s. 6d. a visit to 308, Holloway Road is indicated.

* * *

What a month—no less than four new motors on sale and three of them 1.5's! The latest **E.D.** product has been expected for some time, but it is now in the shops—looking very like a baby 2.46. Called the *Fury*, it is of 1.49 c.c. and features a cased-in reed valve and twin ball races. We will be writing more about this later and needless to say it will be featured in a **MODEL AIRCRAFT** Test Report in due course.

The *Fury* retails at 79s.



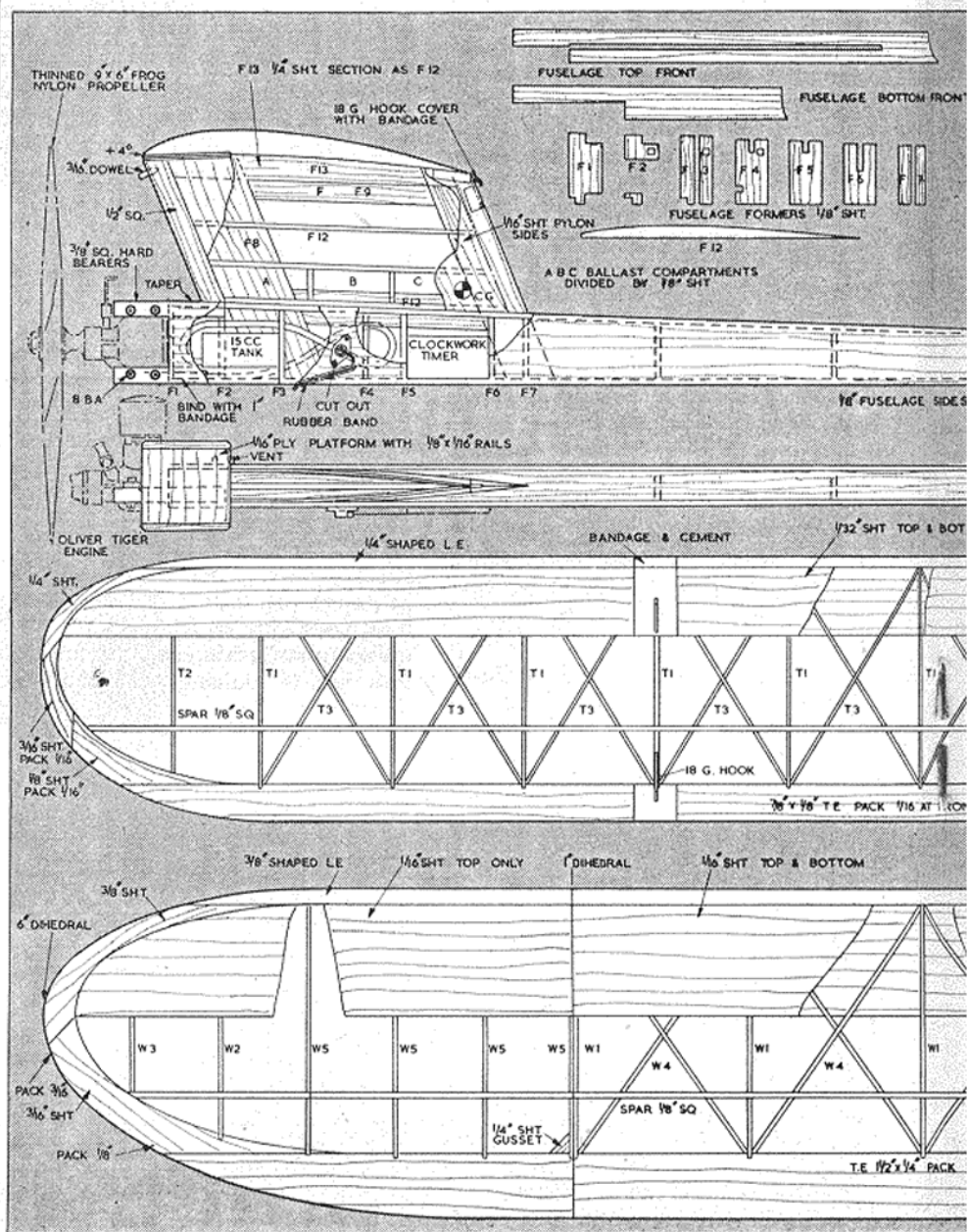
OVERLOAD



OVERLOAD is an appropriate name for this model designed as it is to the new F.A.I. formula, which means it must weigh $26\frac{1}{2}$ oz. The construction follows usual practice and the instructions on the plan are more than adequate for the experienced builder to follow (this is not a beginner's model); however the following notes on trimming will be of assistance in getting those "in the groove" flights.

Firstly, weigh the model to ascer-

FULL SIZE WORKING DRAWINGS OF "OVERLOAD" ARE OBTAINABLE FROM YOUR LOCAL DEALER OR BY POST FROM MODEL AIRCRAFT PLANS DEPARTMENT 19-20, NOEL STREET, LONDON, W.1. PRICE 6s. 0d. POST FREE.



AD New Rule F.A.I. Power Model by J. Baguley

tain the amount of ballast needed to bring it to the F.A.I. weight of 26½ oz. Assemble the model and determine where the ballast should go to bring the c.g. on, or slightly in front of, the position shown on the plan, then install it in the pylon weight boxes, taking care to position it firmly.

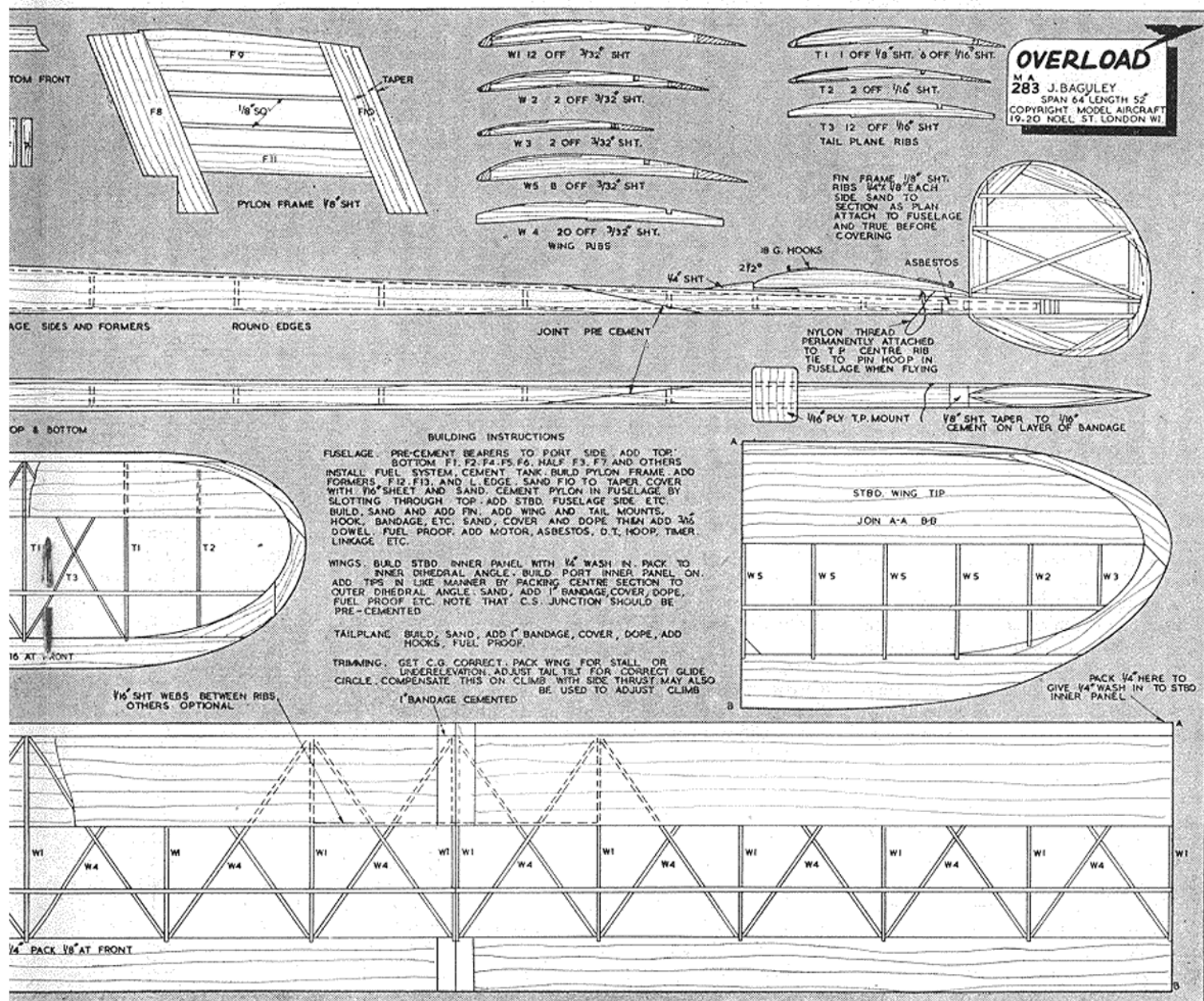
Check that the tailplane incidence is correct in relation to the engine thrust line and test glide, adjusting the wing incidence and tail tilt to

give a glide with slight right turn. With a motor run of 10 sec. and d.t. not much longer give a low powered flight. The model should climb slightly right, at 60 deg. attitude, and slip into a glide. If the model does not do this, get the glide correct by adjusting tail tilt and wing incidence before further increasing the power. Once these adjustments are made the power may be gradually increased, but if on higher power the model turns too tightly, cement

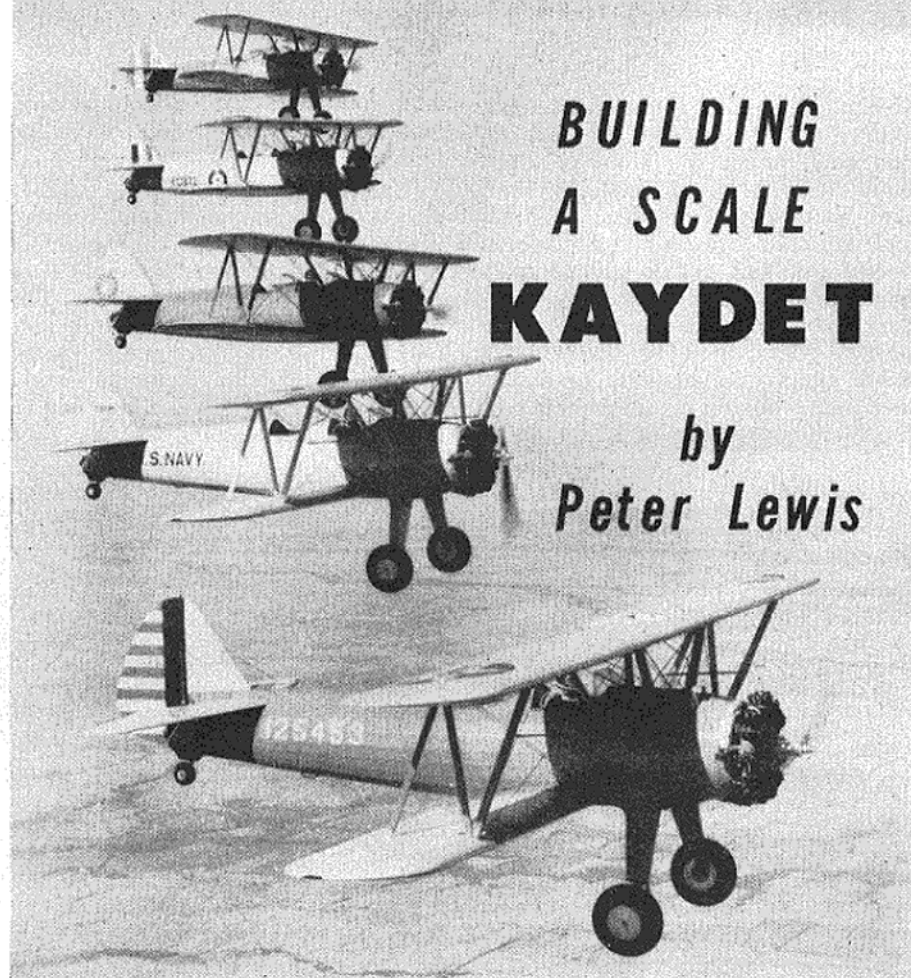
a small piece of 1/16 in. sq. to the left-hand side of the fin and balance the effect on the glide with more tail tilt.

If the model shows looping or left turning, or rolling tendencies, cement a small piece of 1/16 in. sq. to the right-hand side of the fin and balance this with decreased tail tilt for the glide.

The wing warps should be strictly adhered to as the whole trim is based upon the slight left rolling effect provided by the increased incidence of the right-hand inner panel. The glide should be directly comparable with that of an open power model and in correct trim the model should be capable of at least 3½ min., that is, using a hot competition 2.5.



An M.A. 'how to do it' feature



BUILDING A SCALE KAYDET

by
Peter Lewis

TYPICAL of the rugged biplanes of which America has produced such a variety, the *Kaydet* nevertheless was an outstanding machine judged by any standards, and the wide variety of colour schemes possible makes it a "natural" for the solid modeller.

The original solid model *Kaydet* was made to a scale of 1/28th, a size which made possible the incorporation of most external details, at the same time keeping it to convenient proportions. The accompanying 1/72nd plans may be redrawn to any desired size and the amount of wood needed then decided. Obeche and podo are very effective for the job as both are easy to work with and take a smooth finish.

The simplest way of providing hollowed-out cockpits is to make the fuselage block of two halves cemented vertically together. Two thin wire nails pointed at each end and inserted internally are also helpful in keeping the pieces together during shaping.

After tracing the side elevation, cut to the outline and repeat the procedure for the plan view. The corners are then smoothed away until the fuselage sections conform with the drawing.

Now is the time to attend to the cockpit. Carefully prise the fuselage halves apart, remove the pins and mark the inside walls for an inch fore and aft of the cockpit area. This is usually sufficient for this scale. Carve away the unwanted wood; lino-cutting tools are very useful for the smaller sizes. After sanding the sides, glue stringers—represented by silk thread—in place and cut the two dashboards from 1 mm. plywood. Cover with instrument panels and glue to one side of the fuselage. When firm, the two fuselage sides are glued together again and the whole sandpapered. Cowling panel joints are simulated with knife lines and the fastenings by pin pricks.

Sheet of the appropriate thickness comprises the tail surfaces. After

Some of the air forces that have used the "Kaydet" are represented in this unusual photo. Top to bottom: Peru, Gt. Britain and China. The two lower machines are of the U.S. Navy and Army respectively.

shaping to outline and section, one of the several popular methods of showing ribs is used, thin silk thread being employed in the original. Control surface breaks are shown by an incision to the necessary depth.

The wing panels are made in the same way as the tail from wood of the correct thickness, and the ribs and lower plane ailerons added. Dihedral is steamed into the upper wing and holes are drilled to receive struts and bracing wires.

The centre-section struts may be fitted at this point, together with the undercarriage. The latter consists of 18 S.W.G. wire legs inserted into the fuselage, bent to form the wheel axles and completed with wood fairings. Thin card fillets are used to blend the legs into the fuselage. If they are to have the polished Navy finish, the legs are covered with metal foil.

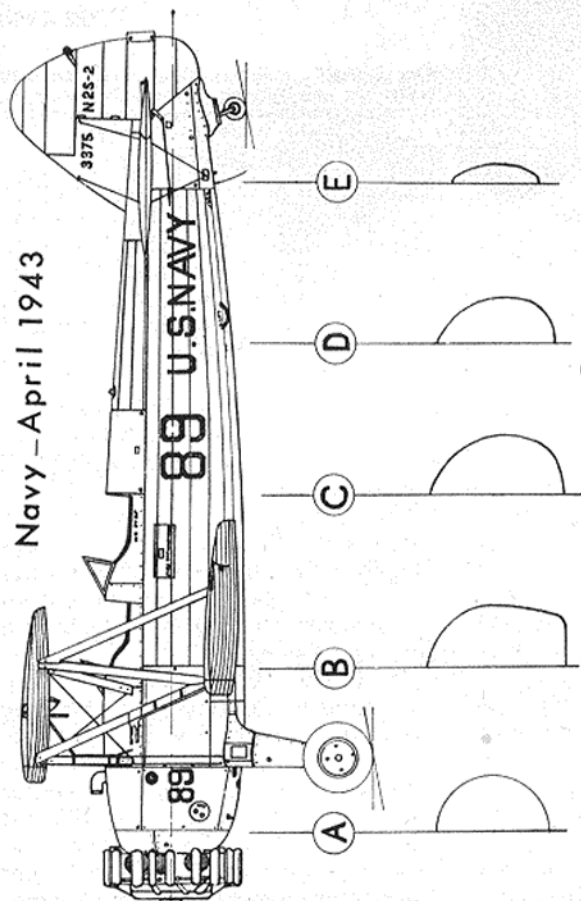
The tail surfaces may now be glued and pinned in position and all of the components painted. Use several thin coats of whatever colours are chosen. The cockpit interiors are coloured light green, with a black edging of thin rubber-covered wire glued on. Seats and controls follow next. Main wheels are made with bone curtain rings for tyres, with hubs of either wood or plastic wood. The wheels are fitted to the axles, retaining washers are soldered on and the metal-foil-covered outer discs glued in place.

After the other small details have been made up and added, the model is ready for assembly. The lower wings are pinned and glued to the fuselage and are followed by the upper pair, spaced by the interplane struts. When everything is firmly set, bracing wires are added to the wing bays and to the tail unit.

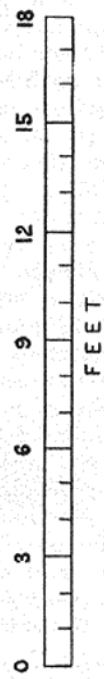
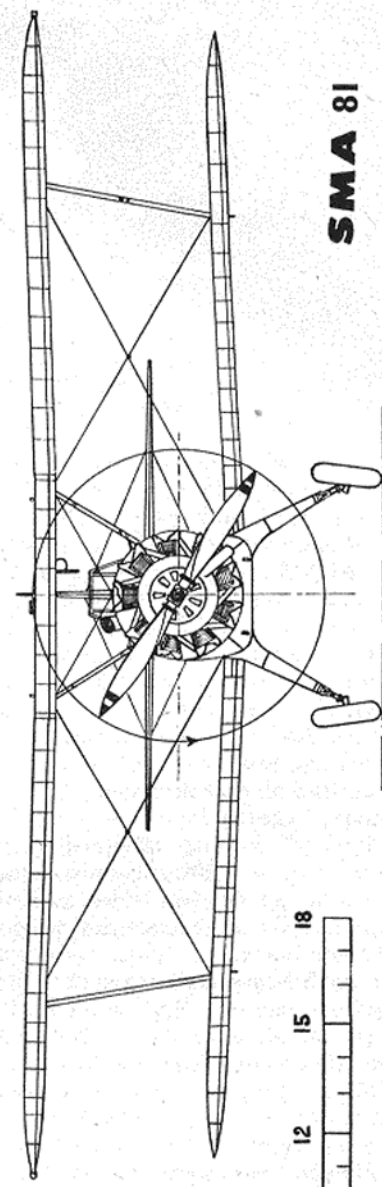
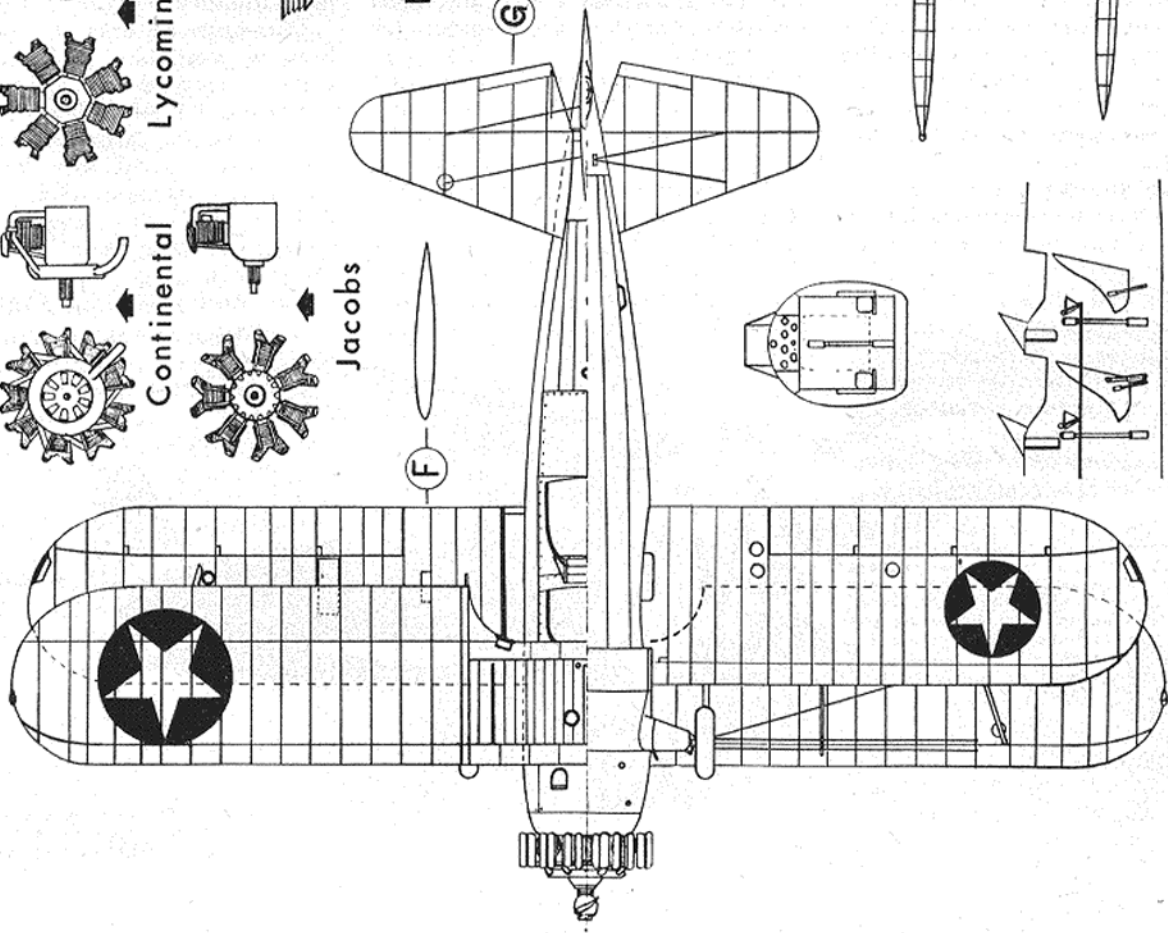
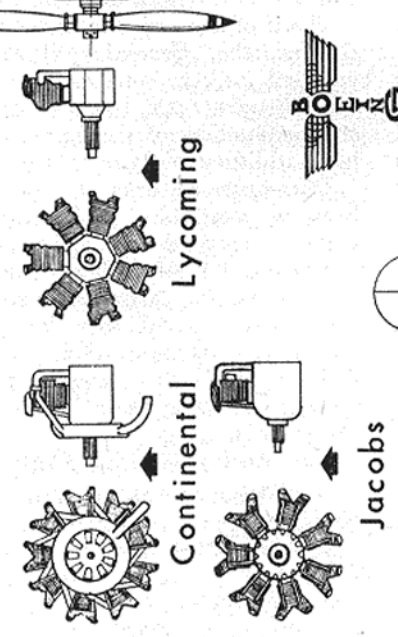
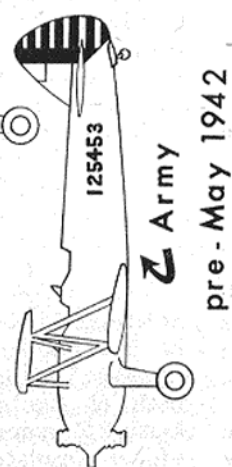
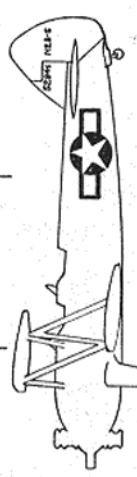
The motor is constructed with a turned wooden crankcase, to which are attached either nine cylinders for the Lycoming or seven for the Continental or Jacobs. They may be made from cut lengths of dowelling to which thread has been glued, or by any favoured alternative method. Wire pushrods and other details are added and the completed black-painted motor glued to the nose firewall. The fixed-pitch wooden airscrew is carved from a laminated

(Continued on page 200)

Navy - April 1943



Navy 1945



P.M.H. LEWIS

SMA 81



The author's original solid made to 1/28 scale. As can be seen, it incorporates most of the external detail necessary to produce a really "finished" replica.

and an initial 26 were delivered in 1936 as the PT-13. This was the Stearman Model A75, and it differed from the earlier A73 in having the wingspan slightly increased to 32 ft. 2 in. and more power in the form of the Lycoming R-680-5 of 215 h.p. Brakes, operated by pressure on the toes of the rudder pedals, were also added, and other detail improvements contributed to the enthusiasm with which the new trainer was received.

On April 30th, 1938, the Wichita plant of the Stearman company was absorbed by the expanding Boeing concern, of which it became known as the Stearman Division of the Boeing Airplane Company.

With the change in 1940 from Lycoming to Continental power, the designation changed to PT-17, while the Jacobs-engined model was the PT-18. The final version evolved was the Continental PT-27-BW for Canada, with enclosed cockpits to ensure greater comfort in the very low winter temperatures encountered.

Total of the series built before and during the Second World War reached 10,346, and with cessation on February 14th, 1945, there ended the production of the last quantity-built military biplane in the U.S.A.

War-surplus stocks of *Kaydets* soon became available, and they were widely adapted as private-owner types and for stunt-flying and agricultural work. Numbers also found their way abroad into foreign air forces to continue their work as trainers and this useful machine appears to have many years of life ahead of it.

The Boeing-Wichita Plant No. 1

(Continued on page 210)

block and french-polished. If the metal one is fitted, it is cut from a plain block and given a silver finish.

Kaydet colouring was as follows:—

ARMY, pre-May, 1942: Ultramarine blue fuselage, chrome yellow wings and tail. Red, white and blue star insignia on all four wing tips, blue vertical and red and white horizontal stripes on rudder. Black U.S. ARMY below wings. Undercarriage legs and struts blue. Serial number on rear fuselage. After May, 1942, the scheme was officially changed to one of all-silver with markings of white star only on a blue ground on fuselage sides and above port and below starboard wing tips. Motor black.

NAVY, pre-May, 1942: Chrome yellow overall. Red, white and blue star on all wing tips. U.S. NAVY in black on rear fuselage. After May, 1942, the red spot of the insignia was deleted but markings were otherwise the same. Undercarriage legs were polished metal, motor black.

Although the foregoing were the standard Navy colourings, many variations could be seen at U.S. Naval Air Stations, and these included NSs and N2Ss in schemes of silver overall, in grey, silver and yellow and in blue and yellow. Individual numbers were carried on the nose and fuselage, serial on the fin and designation on the rudder. Coloured fuselage and wing bands and rudders were also in evidence.

Apart from the usual 1/72 scale solid the "Kaydet" lends itself particularly well to the "built-up" type of model and readers are referred to the articles "Achieve that life-size look," which appeared in the March and April, 1958 issues. The following gen will help any reader intending to adopt this method and also sort out the problem of putting the right engine on any particular version!

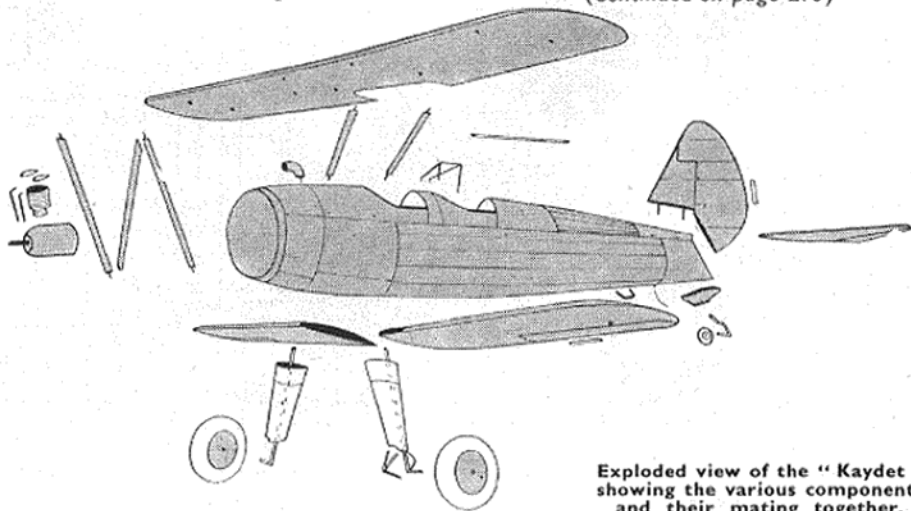
MANY of us have pleasant memories of training during the 1940s at American flying schools where the *Kaydet* was in widespread use, and it had very pleasing lines

and good proportions, which resulted in its purposeful, "just-right" appearance. The aircraft was a delight to fly, and adequate power and sensitive controls gave an immediate response for aerobatics, of which it could perform the full range with ease. Its compactness, coupled with very rugged construction, encouraged the confidence of pupils, in whose often-not-too-gentle hands the machine had to endure rough handling for many hours in those busy days.

The design originated as the Stearman Model A73 and was known in its commercial version as the *Cloudboy*. At the time of its inception, both of the armed services were looking for a new, up-to-date primary trainer to replace the old Consolidated PT and NY series which had been valiantly carrying the burden for some years.

Four were purchased for Service Test in 1931 by the U.S. Army under the YPT-9 designation, while the U.S. Navy took 61 in 1934 as the NS-1. During 1932, the four original Army machines were converted to use engines differing from the Wright R-540-1 at first fitted.

After exhaustive testing, the Army finally decided to adopt the machine

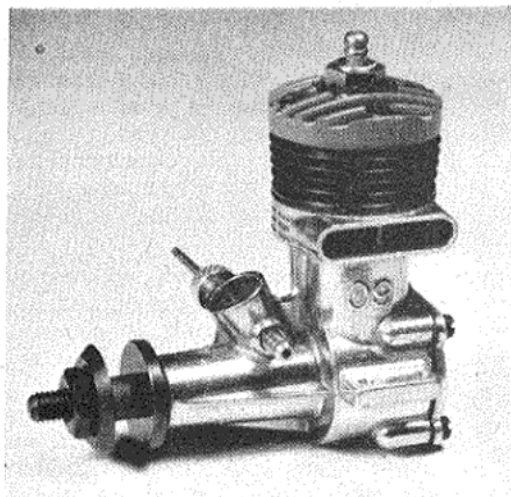


Exploded view of the "Kaydet" showing the various components and their mating together.

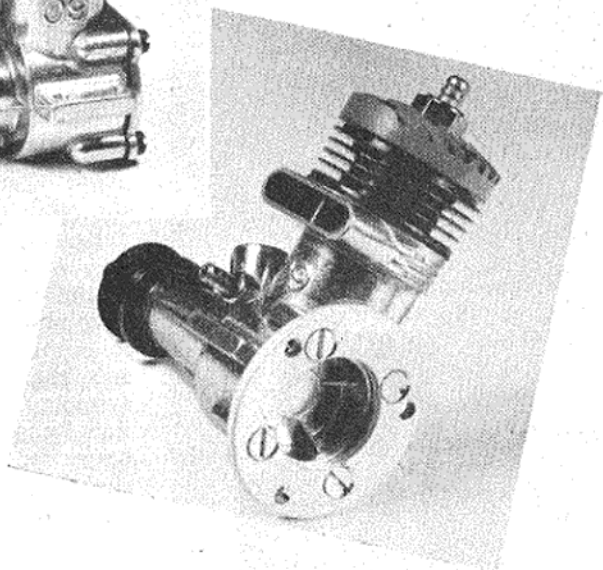
What's New in Power

the latest engine news

by P. G. F. Chinn



The K & B Torpedo 09, smallest of the Torpedo line and for which a much above average performance is claimed. The engine is also adaptable to bulkhead mounting by means of the special ring mount shown.



WELCOME news for speed enthusiasts and particularly for those interested in the biggest and fastest class, is that, in response to numerous requests, the Duro-Matic Products Division of the Testor Corporation has embarked on a production run of 5,000 McCoy Red-Head 60s.

This, following only a few months after the reappearance of the Dooling 29 and thus re-establishing the two most successful racing model engines in the 10 c.c. and 5 c.c. classes, could well result in some renewed interest in speed events.

These new Mac 60s will sell at \$40—approximately £14 6s.—which, although rather more than the figure at which the 60 was last sold, is still a very reasonable price for a precision made racing unit of extremely high performance. One of these engines is now on its way to us from the U.S. and we shall be describing it in the near future in these columns. Some minor improvements distinguish the current model from the earlier Series 20 engine dealt with in our Engine

Four photos showing some of the modifications to the porting of the new type O.S. Max 15 engine. A recessed head gasket is now also used. The new model is of more squat appearance than the previous type.

Test series some years ago.

Also due to be announced shortly by the same company is a new McCoy Red-Head 19 stunt engine which will be a companion model to the Red-Head 29 and 35 described last month.

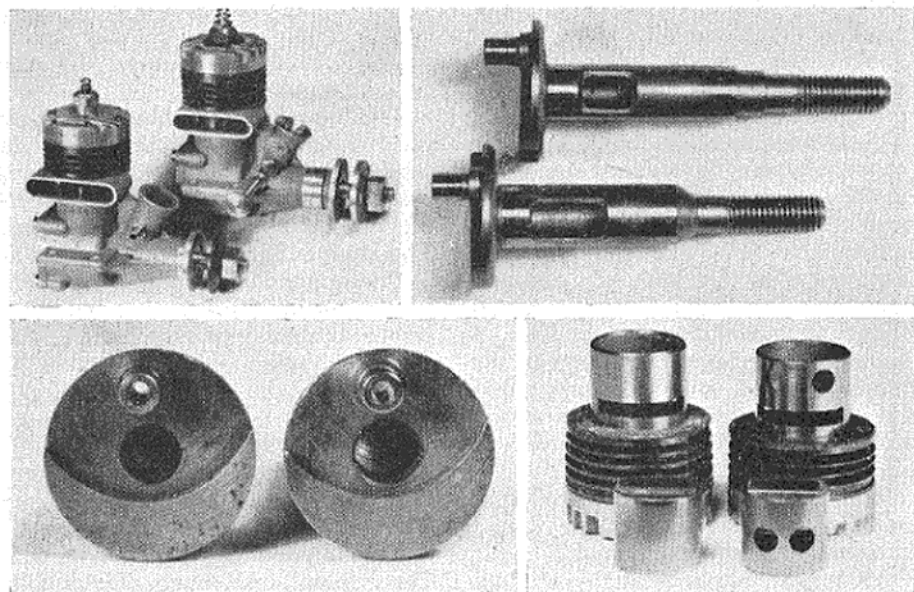
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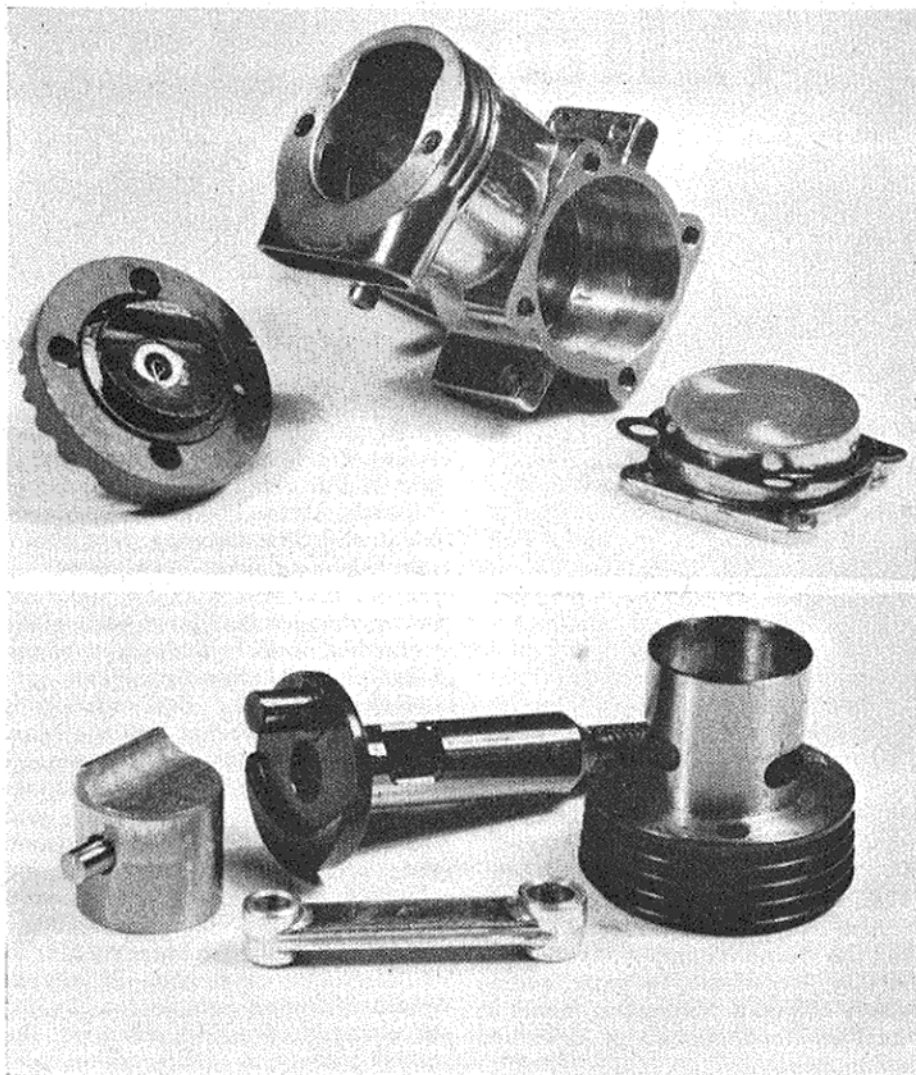
Last month we mentioned the new Max-II version of the 2.5 c.c. O.S. 15 which is now going into production

in Japan. Two of these engines have been received for preliminary testing and a full report will be given in MODEL AIRCRAFT in due course. Meanwhile, the accompanying photographs, comparing components of the old and new Max 15, show the many changes that have been made to further improve the output of this Championship winning engine.

Externally, the new model is clearly recognisable as an O.S. Max, but, in fact, it has new components throughout. The crankcase, crankshaft, cylinder, cylinder-head and piston have all been redesigned and the only parts which remain unchanged are the backplate, con-rod and gudgeon-pin.

Starting with the crankshaft, this is found to have had its journal increased from 8 mm. dia. (0.315 in.) to 9 mm. (0.354 in.), allowing the intake passage to be opened up from 5.5 to 6.5 mm., an increase in cross-sectional area of nearly 40 per cent. The rectangular valve port is considerably enlarged also and is 10 mm. long, as against 8 mm. previously used, and, instead of the





Parts of the K & B Torpedo 09. Construction is very similar to the larger Torpedo engines but with one or two extra refinements.

prop driver being keyed onto a flat, the better arrangement of a taper drive is now employed. A blued steel prop washer replaces the aluminium one fitted hitherto.

The new crankcase casting is distinguished by a wider exhaust duct and larger carburettor intake. This latter now has a throat diameter of some 9 mm. (as against 6.5 mm.) at the spraybar, for use with pressure feed. A venturi insert is provided to reduce the choke diameter to 6 mm. for normal suction feed. In common with the Fox 29R, Enya 29-3 and the 1958 model Max 29 and 35, a squared valve aperture is used in the main bearing to give more rapid opening and closing. The actual duration of the intake period is slightly reduced.

The cylinder is basically the same as that of the previous model but a recessed, "blow-out proof" head joint is now employed, a by-product

of which arrangement is that the cylinder height is reduced and there is one less cooling fin on the cylinder. The cylinder and piston now carry two circular skirt transfer ports similar to those featured by the O.S. Max 29 and 35.

This new Max 15 shows the same good quality construction seen in other recent O.S. engines. Both castings and machined components are very clean and well finished. The shaft is hardened and a good fit in the bronze main bearing and there is the usual bronze big-end and bronze-bushed glowplug hole. The complete engine weighs 3½ oz.

* * *

One of our recent acquisitions from the U.S.A. and for which we are indebted to Johnny Brodbeck of the K & B-Allyn Company, is a K & B Torpedo 09. Although this motor,

with its 0.099 cu. in. and 1.6 c.c. capacities, does not fit into any special national or international displacement group, a good deal of interest has been centred on the 09 because a very high performance has been claimed for it—namely 0.242 b.h.p. at 15,100 r.p.m., or nearly 150 b.h.p./litre.

At the time of writing we have not dynamometer tested the 09 and it is therefore inappropriate to comment on this claim in any detail at this stage, but a comparison of prop/r.p.m. figures suggest that, in fact, the revolutions under a given load are about 10 per cent. down on those of the well-known Torpedo 15 model.

Bearing in mind that the 09 has only two-thirds of the displacement of the 15 and that a 10 per cent. drop in r.p.m. is equal to a reduction in power of 27 per cent., it will be seen that, while this does not fully support the maker's b.h.p. rating, it does suggest that the b.h.p./litre figure for the 09 could actually be slightly superior to that of the 15—in itself a quite remarkable achievement. Experience has shown that, as swept volume is reduced, it is very difficult to maintain high specific outputs with glowplug engines. In fact, until the advent of the Torpedo 15 and the later type Super-Tigre G.20, no one had succeeded in equalling 100 b.h.p./litre with a 2.5 c.c. production glowplug motor.

The basic layout of the Torpedo 09 is, in general, the same as that of the other current Torpedo models. Construction is also similar to the bigger Torpedoes. The main bearing is unbushed, but both the shaft and piston are hardened and the crankcase casting bears evidence of extra finishing not apparent in the larger K & B engines.

There are really no extreme features in the design of the Torpedo 09. Porting, both in respect of areas and timing, is fairly conventional (the large area transfer passage being, perhaps, the most noteworthy feature) and the stroke/bore ratio, although lower than that of the Torpedo 15, strikes a middle course at 0.892 : 1. A counterbalanced shaft with $\frac{1}{16}$ in. dia. journal and $\frac{5}{32}$ in. crankpin, is employed. The valve port is $\frac{9}{32}$ in. \times $\frac{1}{4}$ in. and the passage through the shaft is $\frac{7}{32}$ in. Induction timing is a conventional 45 degrees after-dead-centre 180-degree period. The shaft has a machined-in crescent counterweight and drives a steel prop washer through mating tapers.

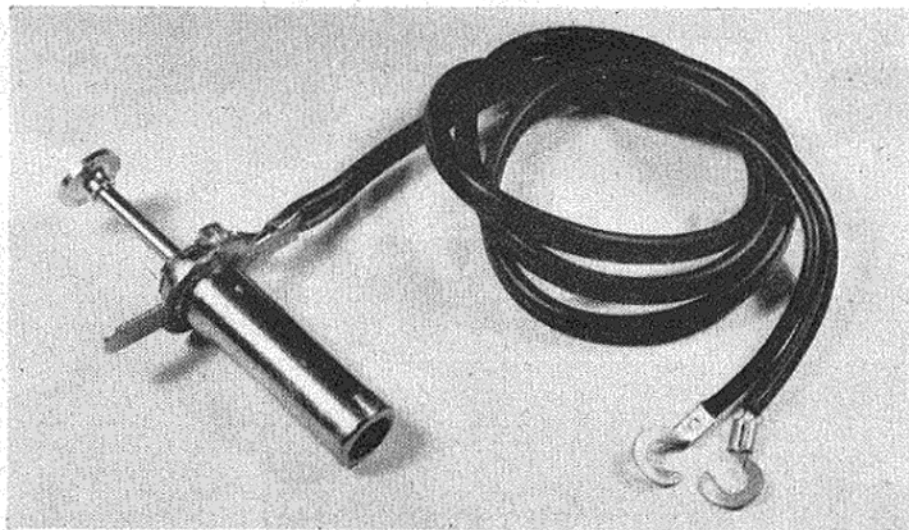
K & B's "Uni-Klip," an excellent solution to the glowplug connector problem. It fits virtually all plugs and engines.

The piston has a nicely filleted baffle and is lapped for $\frac{3}{16}$ in. of its total length of $\frac{31}{64}$ in., being relieved less than 0.001 in. at the skirt. A fully-floating, solid gudgeon-pin, with domed and polished ends, is used. The connecting-rod is an aluminium forging with plain eyes and has a small oil hole in the big end. The complete piston and rod assembly weighs 0.23 oz. The cylinder is of typical Torpedo pattern, with integral fins, blued against corrosion, and radiused ports. The head is of the usual finned design, with centrally located plug and green enamel finish. Four screws secure the head, two of them passing through the cylinder fins to tie the complete assembly to the crankcase.

The Torpedo 09 has a bore and stroke of 0.521×0.465 in., giving a swept volume of 0.0999 cu. in., or 1.637 c.c. It weighs 2.8 oz. The engine is for beam mounting but a lightweight ring mount is available as an accessory for bulkhead installation.

* * *

Also from K & B-Allyn is something new in glowplug connectors,



the "Uni-Klip." This is an excellent little gadget since it can be used, not only on K & B engines and plugs, but on virtually all motors, including the Half-A types with integral glow filaments. The Uni-Klip consists of a $\frac{7}{16}$ in. dia. outer casing, which is the earth contact, and a spring-loaded plunger inside to which is attached a brass expanding collet that grips the plug terminal. The connector is supplied ready to use, attached to 2 ft. of rubber-covered lead with brass eyelets for connecting to the battery terminals.

We checked up to see how many

different makes of plugs the Uni-Klip will fit. Apart from K & B and Allyn, we tried Champion, Veco, O.K., O.S., McCoy, Enya, Atwood, Super-Tigre, Cox, O & R, Webra, Spitfire and Burford and found that the Uni-Klip worked well with all these. Unfortunately, it would not fit the K.L.G. Miniglow, due to this plug's large spherical terminal. The early type McCoy Hotpoint and Arden are other types which have terminals too big for use with the Uni-Klip, although in this case, this is of little importance as the Arden and Hotpoint are no longer made.

A home made AIRSPEED INDICATOR

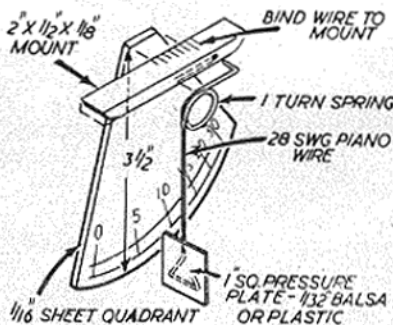
THE pressure plate type of airspeed indicator was a familiar sight on old-time aircraft—usually fitted to an interplane strut where the pilot could see the scale from the cockpit. The same type of instrument scales down to "model" size and works with a good degree of accuracy.

The quadrant part can be cut from $\frac{1}{16}$ in. sheet balsa (or thin ply if you are not unduly worried about weight). This is cemented to a suitable mounting strip. The wire arm is bent around a $\frac{1}{4}$ in. diameter dowel to give a one-turn spring, the top made off as shown and bound and cemented to the mount.

The pressure plate should be about 1 in. square and can be cut from thin balsa, ply, plastic sheet or even card. It is cemented on to the end of the wire arm, lining up with the bottom of the quadrant.

The best way of graduating the scale is with the co-operation of a car owner. Strap the mount securely to a 2 ft. length of lath with a rubber band so that the whole instru-

ment can be held out of the car window well clear of disturbed air. Then get the driver to accelerate up to a fixed speed and hold that speed. Note the point on the scale reached by the pressure plate as it is deflected by the airstream. Repeat for other



speeds, as necessary, to completely calibrate the scale.

This size of pressure plate indicator usually works best at speeds of between 15 and 40 m.p.h. At higher speeds the plate may not assume a

steady position, but it is generally possible to extend the scale higher, if required.

Fit to a model by strapping or cementing the mount under the wing well clear of the slipstream. On a C/L model, mount on the inner wing with the scale facing into the centre of the circle for the pilot to be able to read the scale; or on the outer wing facing outwards if readings are to be taken by someone outside the circle. The airspeed indicator can, of course, also be used on F/F models, but it is difficult to read the scale unless you can run alongside the model, as when coming in to land.

It is easily possible, however, to make the pressure plate record the speed by fitting it with a small wire stylus rubbing against the scale. Tape a piece of carbon paper between the scale and the stylus to give a record of the movement of the pressure plate. It is usually possible to distinguish on such a record the difference between a sudden increase of speed and the average speed at which most of the flight has been flown by the different density of the trace. But to work efficiently, only very light pressure must be applied by the stylus.

PHOTO NEWS

'The pick
of the pics'

A VERY clean line in class "A" team racers is featured in our first photo this month. It was designed and built by F. Turner, of Street, Somerset, who has named it *Orgo*. This is the last in a development of three designs and a dozen models, built by Mr. Turner and fellow members of his club. The particular model shown in the photograph is powered by an E.D. 2.46 and does 75 m.p.h. but if he has read the article on getting "More Urge from your E.D." in the April MODEL AIRCRAFT it's probably doing 80 by now!

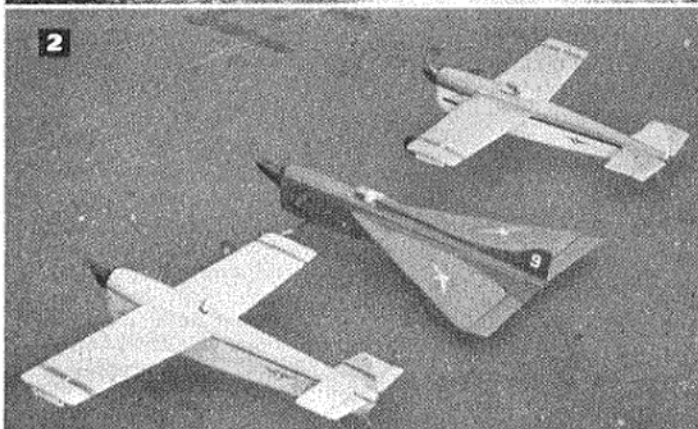
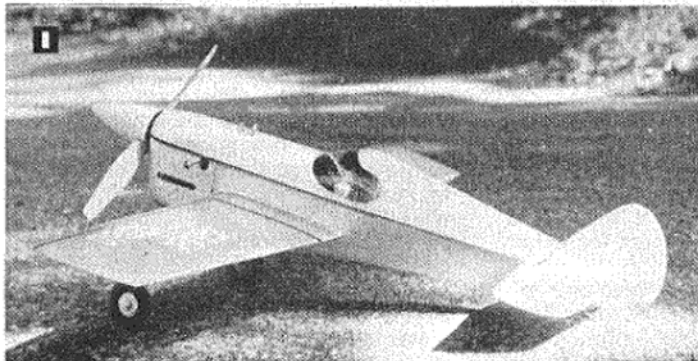
Still on the subject of class "A" team racers, we come to photo No. 2, which shows three of Sgt. Woodrow's models. The orthodox models are his *Alien* design which was published in MODEL AIRCRAFT (M.A. Plan No. 244), while the model in the centre is a "delta-ised" version of the same design, which uses an *Alien* fuselage. The performance of the delta is quite up to normal standards,



turning in 81 m.p.h. for 45 laps with a 10 c.c. tank.

Photo No. 3 shows the obvious answer for married types who want to carry on modelling—get the wife building as well. The "model" couple are Tech. Sgt. Roger Frank of the U.S.A.F. and his British wife Cecily. The Sgt. has been modelling for ten years and builds all types of aircraft, preferring 1/72 scale types, but his wife is a comparative beginner as she only took up the model game four years ago and as you can see she prefers boats to aircraft.

A "reworked" kit model is featured in our next photo (No. 4). It started life as a Keil Kraft flying scale *Sabre*, but now it has cockpit details, knock-off wings and a





plug-in undercarriage. With all these mods the model, including Jetex 50 motor, weighs 10 oz., but even so builder B. Hartshorn, who hails from Australia, tells us that it r.o.g.'s most realistically.

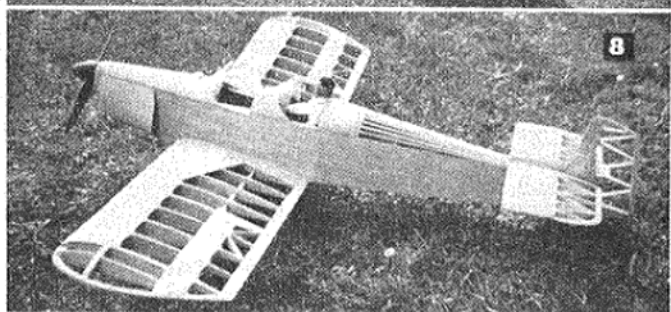
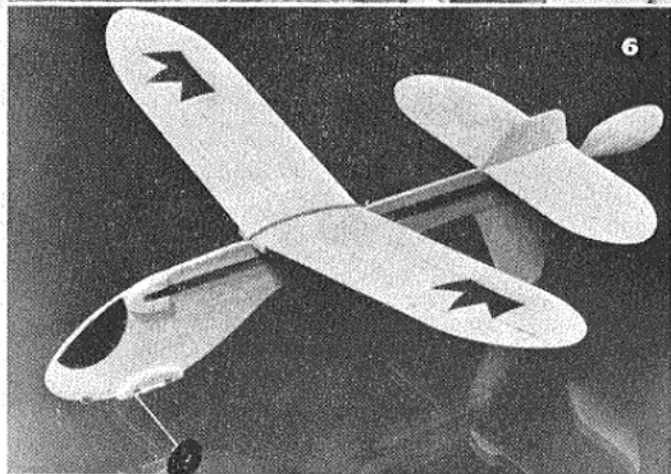
The only radio model in this month's selection of photos comes from Malta and is the work of George Curnie. As can be seen from the photo (No. 5) it is a Piper *Tri-Pacer*, and was built from an American Sterling Kit. It is powered with a D.C. 350, and the torsion bar nosewheel safely absorbs landing shocks when its 4½ lb. touches down. The radio is a single channel set, and the model has an excellent performance.

Perhaps it is unnecessary for us to say that the "whimsie" shown in photo No. 6 comes from the Malmstrom stable. Ray has named this one *Skyabout* and it is an all sheet construction, 18 in. span, ¾ oz., rubber driven pusher. Needless to say, it flies—average performance 20 sec.—but how Ray keeps on dreaming up these different shapes, we don't know.

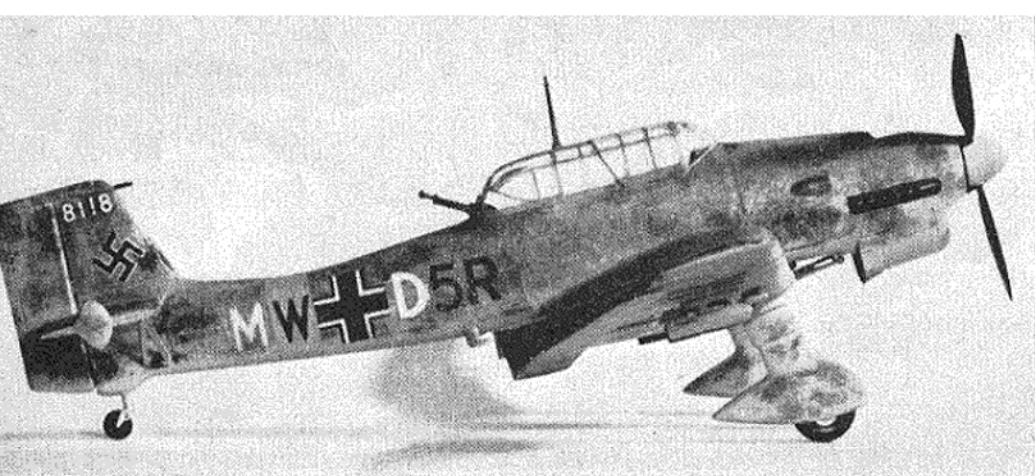
An interesting F/F scale model of the Bellanca *Cruise-master* is shown in our next photo (No. 7). It is the work of reader D. Wiggill, of Natal, South Africa, and its colour scheme is white fuselage and red wings. As yet the model has not been flown under power, but hand launches reveal a smooth steady glide.

There is something especially attractive about a "naked" framework, particularly when it is of such an attractive and well built model as that shown in photo No. 8. With the exception of the wing section, and a slight increase in tail area, it is an exact scale F/F replica of that popular full size "do it yourself" aeroplane, the *Druine Turbie*. A wingspan of 38 in. gives an area of some 240 sq. in. and builder W. Lister tells us that the weight is 10 oz. so allowing a bit extra for covering, this would give a very practical wing loading. We can give no details of performance as when the photo was taken the model had not been flown (we hope!).

The outsize in ducted fan jobs shown in our last photo (No. 9) is the brainchild of Ron Aarons (also in photo), a member of the experimental staff at International Model Aircraft. It has a wingspan of 5 ft. which gives an area of 500 sq. in. and in spite—or because?—of the large amount of ply used for the fuselage skin, weighs 3 lb. The "fan," which is actually a two bladed 6 in. diameter propeller, has been driven, on different occasions, by a Frog 149 and 2.49 while the photo was taken by George Fletcher, who designed the latter motor.



Would you like your model to appear in Photonews? We are always pleased to receive photographs and news of readers' models—old or new. Just send us a print, not smaller than postcard size, together with full details of the model and relevant photographic gen. A word of warning: we cannot use photos that are out of focus, fuzzy or taken against a confusing background. A fee is paid for all photographs that are published.



Plastics in Perspective

If you've been bitten by the "plastic bug" then this concluding part of M.A.'s survey is just what you've been waiting for: choice of the more advanced type of model, how they're made, plus a complete photo sequence showing the step-by-step stages in building a highly detailed model

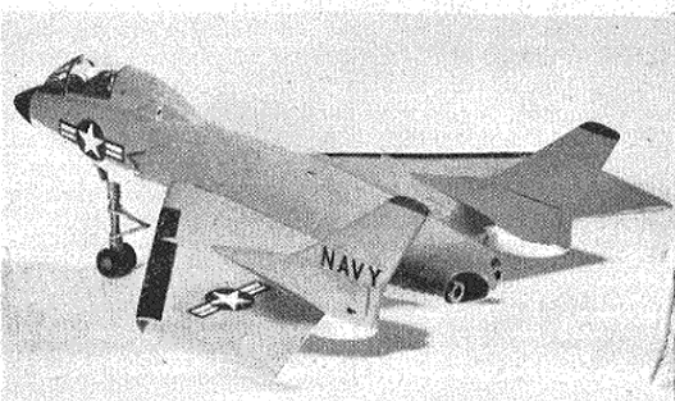
As one might expect, the numerous plastic kits now on the market vary somewhat in quality. There is often some difference, also, in the manufacturers' treatment of his subject, particularly in the interpretation of details.

This is noticed, for example, in the various ways that different makers deal with a typical retractable type undercarriage. The simplest solution here is for the manufacturer to omit the gear altogether and mould the model with a "retracted" undercarriage. Secondly, there is the simplified type of extended gear in which a non-rotating wheel is moulded in unit with strut and cover-

plate but no wheel wells exist. If desired, the undercarriage can still be omitted in order to simulate the retracted position. A third approach is the provision of separate struts, rotating wheels, cover-plates and doors, with or without wells. Finally, we have the true retracting undercarriage, such as is seen on one or two of the more elaborate American kits.

A word about "quality." Under this general heading we can place (a) authenticity, (b) accurate and well-fitting parts, and (c) clean moulding with a minimum of "flash." The price you pay is some indication, but not necessarily a guar-

Our heading photo shows a Lindberg Ju.87b, finished in authentic Western Desert camouflage, while below are a Bell P-39A Airacobra and a Chance-Vought F7U-3 built from Revell kits. These models, which show just how a plastic should be finished, were built by L. Brock.

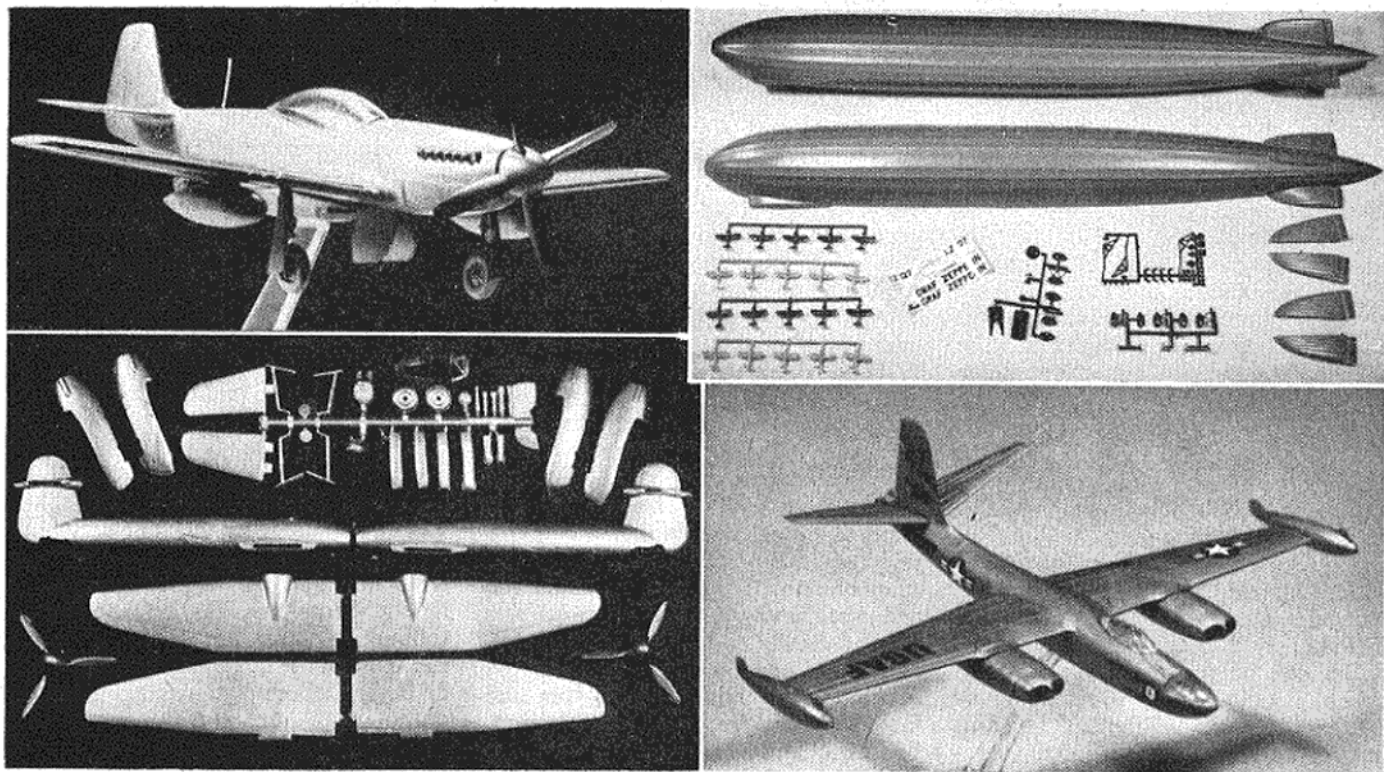


antee, of the quality you can expect.

The new 3s. Frog kits, for example, though essentially simple models, with a minimum of separate parts, are very well produced and will go together with virtually no preliminary work. The Frog B.45 *Tornado* bomber, illustrated, received no trimming at all, except for very minor cleaning up of the transparent nose section. Towards the other end of the price scale, costing 11s. 9d., the highly detailed American Monogram T.28A is equally accurate and is superbly produced. Most of the better class American kits are, in fact, of very high quality, although the standard does not always appear to be fully maintained in some of those made under licence.

The amount of detail now seen in some of the higher priced kits is quite remarkable. Monogram's retracting undercarriages and sliding cockpit canopies really do work and Lindberg are now putting out models with movable control surfaces. Lindberg's F.100 *Super-Sabre* includes a scale J.57 jet engine, complete with afterburner, which is partly visible through an inspection panel in the fuselage, and Revell's *Sikorsky S.55* helicopter also features a detailed engine installation: in this case the nine-cylinder Wasp radial is visible behind nose doors which can, if desired, be cemented in the open position.

Among the smaller kits which contain a commendable amount of detail at extremely low price, the British Airfix range deserves a special mention. Mostly priced at only 2s., these kits contain an average of 27 parts. All to a scale of 1/72 and including such diverse types as the Sopwith *Camel*, *Albatros D.V.* and *R.E.8*, the *Supermarine S.6B*, the *England-Australia DH.88 Comet*, the *Spitfire*, *Mosquito*, *Mustang* and *Me.109F*, this range should be of especial interest



A contrast in prices. Left are two inexpensive but good quality Airfix kits—top the P.51 Mustang and below the Westland Whirlwind, while lower right is the new Frog B.45 Tornado. Top right is the most expensive kit yet produced. Hawk's Graf Zeppelin, which is 38½ in. long and comes with an "escort" of Boeing P.26A fighters.

to modellers wishing to assemble an inexpensive collection of historical aircraft all to a common scale.

Kit Production

It is not generally realised, perhaps, just how much work is involved in producing a plastic kit. Once the dies or moulds have been made, modern injection moulding machines turn out sets of parts at the rate of one every 30 sec., but the work involved in producing these dies is extremely lengthy and costly.

The first requirement, obviously, is an accurate scale master model, and a month or more of work may go into making these patterns after the necessary drawings have been prepared. Even the preparation of drawings may not be entirely straightforward. In the case of most modern aircraft, there is generally no difficulty in securing the co-operation of the manufacturers in providing drawings and data. But when a prototype is under consideration for which drawings are not readily available, such as in the case of certain Russian aircraft or veteran types, this can consume months of research.

The master model, which is often made larger than the final plastic product, is the job of a skilled model-maker. He may use wood, or clay, or a combination of materials. From this, a number of plaster patterns will be taken, from which, in turn, the steel dies will be made. Die-making is the most difficult job of all and the production of a single set of dies for one model may take thousands of man-hours of highly skilled hand-cutting and polishing.

When complete, the various component dies are assembled as a unit and a preliminary test shot is made in the moulding machine. Parts thus produced are carefully checked and any corrections shown necessary are then made to the dies. The process is repeated until perfection

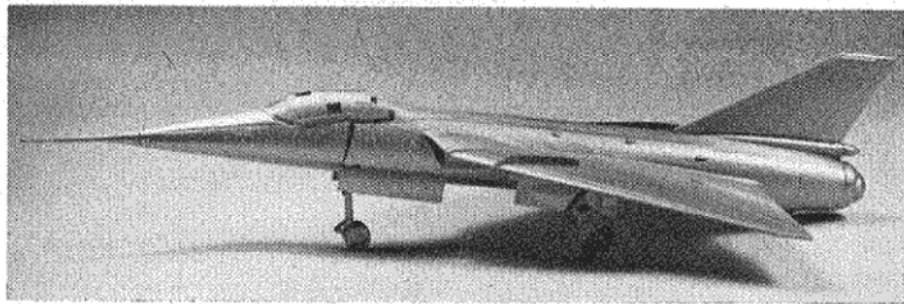
is obtained, after which the steel is hardened, ready for its job of producing hundreds of thousands of kits.

Realism v. Accuracy

A noted professional model maker, whose models have always been accepted as representing the acme of perfection and authenticity, once admitted that he always introduced a slight element of caricature into his work.

One of the features that readily distinguished the average plastic model from the normal wooden solid, is the way in which its surfaces are broken up by lines of rivets and/or by scribed lines or ridges intended to represent panel joints.

To the layman, this is all part of the charm of the plastic model and helps it to achieve an air of realism that is lacking in a smoothly finished wood model. It is, however, another example of caricature, for, if truly



Frog's unique Fairey F.D.2 features a working "droop snout."

scaled down, such rivets and joints would be practically invisible on models approx. 1/50 to 1/100 scale.

Whether you leave such protrusions as they are, or reduce them somewhat, depends on your own ideas on the matter. In any case, there is not much that can be done about scribed lines, but we do suggest that unduly exaggerated ridges are toned down. On one 1/72 scale model, for example, we measured spanwise ridges on the wing surface with a micrometer and found them to be 0.007 in. high—equal to a 1/2-in. bump on the full-size aircraft!

For reducing these ridges, the familiar treatment of wet rubbing down is recommended. Use No. 400 silicon-carbide paper, lubricated with soap and water and wrapped around a small wooden block. This will slightly dull the surface, but the polish can be restored with a metal polish, such as "Bluebell" or "Brasso." (If it is intended to paint the surface, there is no need to re-polish it. It is, in fact, best left matt, to provide a better key for the paint.)

Paint and Transfers

The question of painting is a rather vexed one. We cannot help but feel that seven out of ten painted plastics would have looked better left alone. Fortunately, the majority of plastic kits are moulded in the approximate base colour of the prototype—usually a silver-grey colour—and the only painting then required is limited to anti-glare panels, cockpit interiors, tyres, spinners and the like.

As is well known, cellulose base lacquers or dopes must not be used on polystyrene plastics, nor is it generally feasible to spray paint the small areas involved. Accordingly, very careful brush work is demanded and the old rule about two or three thinned coats being better than one thick one is very much the order-of-the-day. Special paint sets (Frog, Revell, Humbrol, etc.) are available and, before attacking the model, it is advisable to become familiar with the paint, its thinning, brushing and mixing characteristics and drying time, by practising on an unseen interior surface (prior to

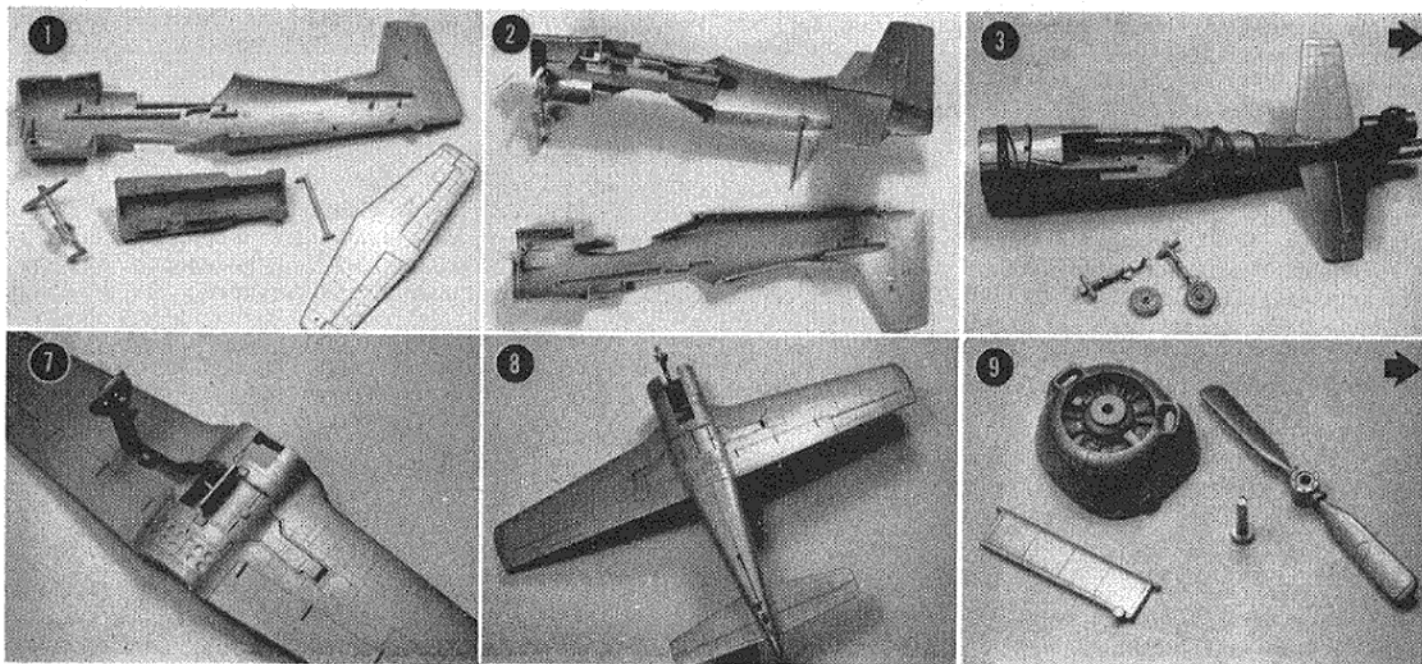
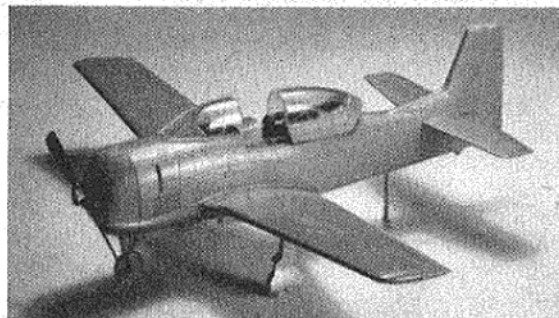
assembly) or on any of the odd bits of moulding stalk left over.

Transfers, or, as they are becoming increasingly known from American usage, decals (from the word decalcomania, meaning the transfer of coloured pictures from prepared paper to glass or china), are of excellent quality in most plastic kits and contain much fine detail such as would be quite impossible to apply with a paint brush. A fine example of this is to be seen in Frog's B.E.A. *Viscount* kit, which contains all the authentic insignia used on the full-size aircraft, including some lettering less than 1/32-in. high. Incidentally, in many kits moulded in metallic grey, swirling patterns are visible in the finished parts, which are due to the flow of the material when injected into the mould. This is something which is apparently difficult to avoid, but we noticed that, in the *Viscount* kit, whether by accident or design, these patterns were mostly confined to the upper part of the fuselage shells, above the windows, where they could be subsequently obliterated by the white painted cabin top of the authentic B.E.A. livery.

Assembly Notes

In connection with this two-part article, a number of different makes of kits were made up, including Airfix, Comet, Frog, Hawk, Lincoln, Lindberg, Monogram and Revell. Last month we mentioned the advisability of starting with an inexpensive kit for your first model and we now

building sequence for the T-28

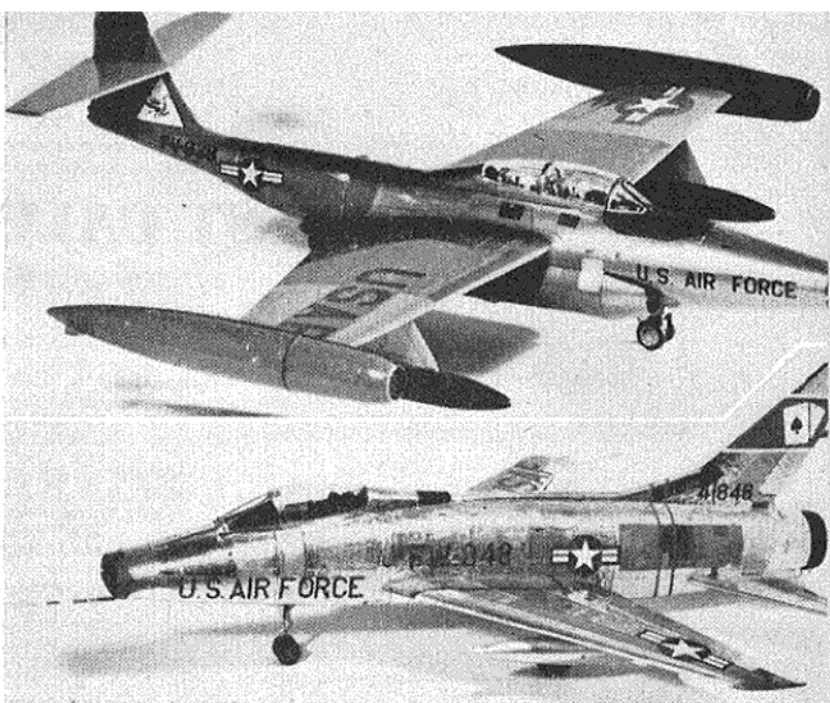


conclude with a brief illustrated construction sequence on one of the more advanced kits, Monogram's recently introduced model of the North American T-28A U.S.A.F. trainer. This model features a retracting tricycle undercarriage, sliding cockpit canopy and detailed interior. Monogram also market a model of the T-28B version of this aircraft in U.S. Navy markings, complete with arrestor hook, slightly different engine cowling and three-bladed prop.

The model is moulded in metallic grey plastic to represent the natural aluminium finish of the prototype. Painting, if desired, is therefore confined to the cockpit interior, engine, walkways, tyres, etc. If the model is to be painted, all this work, with the exception of the black anti-glare panel in front of the cockpit, is best carried out before assembly, but after checking fits.

Assembly begins with cementing the cockpit floor section in the right-hand fuselage shell. We suggest checking that this is central by temporarily laying the right fuselage shell in position. Unless the cockpit detail is central, the sliding cockpit canopy, when subsequently fitted, may tend to foul it. Next, fit the nosewheel strut, tailplane and rear support. (This latter is merely to prop up the rear end of the fuselage to enable the model to stand on its three wheels. If you prefer not to use it, attach a minimum of $\frac{3}{4}$ oz. of lead inside the upper part of the engine cowling.) The two fuselage halves are now cemented together,

Two more of L. Brock's superbly finished models. Top is a Revell Northrop F-89D Scorpion, and below a Lindberg Super Sabre F.100C modified to produce this version of the famous 45th ('Ace of Spades') Sqn. The model is covered with metal foil.



making sure that the swivel pin on the nosewheel fits into its bearing correctly.

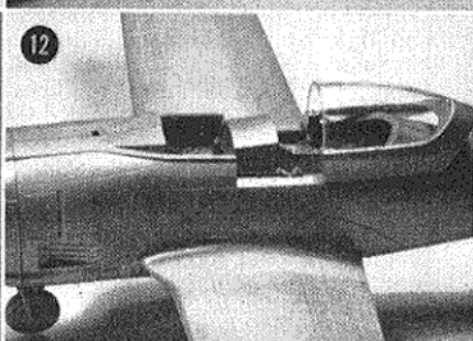
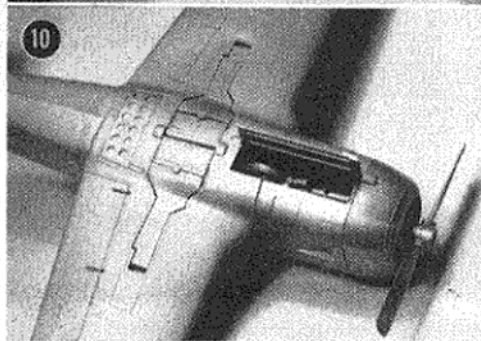
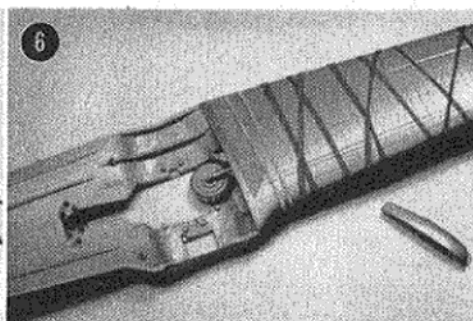
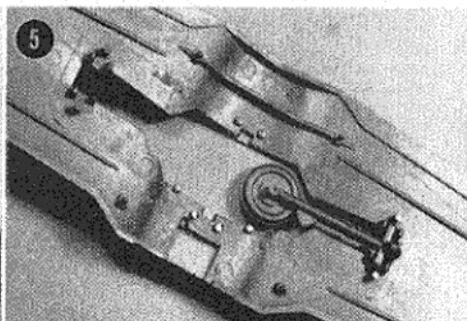
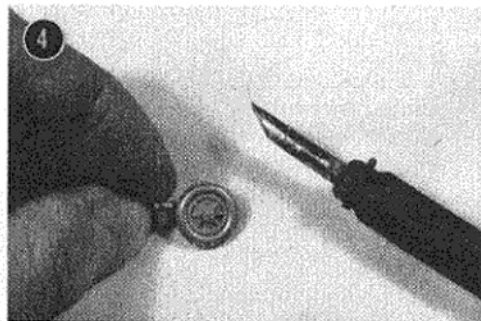
To secure the wheels, use a heated screwdriver or a small (instrument) soldering iron just hot enough to soften the plastic. The ends of the axles are carefully flared out to prevent sideways movement of the wheel. Each undercarriage unit is then laid in position in the bottom of the wing as shown and the top wing surfaces securely cemented and bound in position. The pivoted top end of the u/c leg is very cleverly trapped between the upper and lower wing surfaces in such a way that it is held in either the extended or retracted position. After adding the u/c doors, the complete wing as-

sembly is fitted to the fuselage.

Some extra care is needed here to make sure that the wing root joints are a close fit and that a ridge is not formed between the lower front section of the fuselage and the wing centre-section.

The final details are the cockpit interior and canopy. Attached to the rear canopy base, via a strip of plastic, are two small rivets. These are cut away and cemented into two holes in the canopy base to provide a means of sliding the canopy.

One might be forgiven for supposing that the retracting gear would be a somewhat hit-or-miss arrangement. In fact, it works perfectly and is an excellent illustration of the precision manufacture of modern plastic kits.



MODEL
AIRCRAFT

CONTEST CALENDAR

- May 25th **BRITISH NATIONALS**
 .. 25/26th THURSTON CUP. U/R Glider.
 SHORT CUP. 2.5 c.c. PAA-Load.
 GOLD TROPHY. C/L Stunt.
 S.M.A.E. TROPHY. R/C Multi-
 Control. (Full R/C schedule,
 course and aerobatic flying.)
 DAVIES TROPHY. T/R Class
 "A."
 SPEED. Classes 1, 2 and 3.
 SIR JOHN SHELLY CUP. U/R
 Power.
 COMBAT. (1st Round)
 MODEL AIRCRAFT TROPHY.
 U/R Rubber.
- .. 26th SUPER SCALE TROPHY. F/F
 Scale.
 C/L SCALE.
 DAVIES TROPHY. T/R Class "B."
 RIPMAX TROPHY. R/C. Rudder
 Control. (Course flying man-
 oeuvres 1-6 inclusive and No.
 20.)
 SPEED. Classes 1, 2 and 3.
 COMBAT. (2nd Round and Final.)
- June 7/8th **POWER & RUBBER WORLD
 CHAMPIONSHIP CLASSES.**
 (First Trials.) Centralised.
- .. 15th Godalming M.A.C. Rally. Team
 Racing. "A" and "B."
 Combat
- .. 21/22nd Scottish P.A.A. Festival. R.N.A.S.
 Abbotsinch.
- .. 22nd INTERNATIONAL CLASS C/L
 TRIALS. T/R. Speed, and
 Aerobatic. Centralised.
- .. 22nd Clwyd Slope Soaring.
 .. 29th Northern Heights Gala. Halton.
- July 5/6th **POWER & RUBBER WORLD
 CHAMPIONSHIP CLASSES.**
 (Second Trials.) Centralised.
- .. 13th Enfield C/L Rally. T/R "A" and
 "B." Handicap Speed, Combat.
- .. 20th AREA CHAMPIONSHIPS. Cran-
 field.
 INTERNATIONAL CLASS R/C
 TRIALS. Cranfield.
- Aug. 3/5th **WORLD CHAMPIONSHIPS
 POWER & RUBBER.**
- .. 17th Devon Rally. Woodbury Com-
 mon, F/F, R/C, Combat.
- .. 23rd U.K. CHALLENGE MATCH.
- .. 24th **SCOTTISH GALA**
 CATON TROPHY. U/R RUBBER.
 U/R GLIDER.
 U/R POWER.
 TAPLIN TROPHY. R/C Rudder
 Control, Stunt. (Simplified
 schedule.)
 TEAM RACING. "A" and "B."
 .. 24th South Midland Area Rally. Cran-
 field.
- Sept. 7th **NORTHERN GALA**
 U/R RUBBER.
 U/R GLIDER.
 U/R POWER.
 AEROMODELLER R/C TROPHY.
 R/C Multi-Control. (Full R/C
 schedule, course and aerobatic
 flying.)
 TEAM RACING. "A" and "B."
 P.A.A. LOAD. (International
 Class.)
- .. 14th Croydon Gala. Chobham Com-
 mon, F/F all classes.
- .. 21st GUTTERIDGE TROPHY. Wake-
 field. Area.
 *MODEL ENGINEER CUP. Team
 Glider. Area.
 HALFAX TROPHY. U/R Power.
 Area.
- .. 28th TEAM RACING. "A", "A",
 and "B" Area.
- Oct. 5th Bill White Cup. Chobham.
- .. 12th *FARROW SHIELD. Team Rubber-
 S.M.A.E. CUP. A/2 Glider. Area.
- .. 19th South Coast Gala, Ashdown
 Forest.
- .. 26th HAMLEY TROPHY. U/R Power.
 De-centralised.
 FROG JUNIOR CUP. U/R
 Rubber, Glider, De-centralised.
- Nov. 2nd St. Albans Slope Soaring Rally.
 Ivinghoe Beacon.

*Plugge Cup events.
 All S.M.A.E. competitions in capitals.

M.A. calls on A.M.

Continued from page 182

and are made by specialist firms, as is also such finishing work as hardening crankshafts and anodising cylinder heads, but at A.M.'s everything else is done "on the spot."

Some of the many machining operations on cylinders, pistons, con rods, etc., are shown in the page of photographs, as are the highly important cylinder and crankcase honing processes, and these are the operations that can be controlled to mathematical limits. In the two final, and to the practical aeromodeller the most interesting, stages—assembly and testing—a sympathetic touch, and knowledge of the "feel" of a motor is, however, of the greatest importance. All A-M motors are assembled by practical modellers, whose skill and intimate knowledge is reflected in the absolutely consistent quality of the finished product.

The test room is a separate building

from the main works and here every single motor is run before leaving the factory. The motors are clamped to a test stand and the approximate compression setting found while turning the prop by hand. An electric motor is then swung into place and the engine started and run until the correct settings are obtained, when it is stopped and restarted by hand.

Our first question on leaving the test room (you couldn't talk in there) was how many motors won't start? The answer was none, but occasionally an engine is returned to the workshop with a tight contra piston or similar minor fault. The greatest number of returns in any one week has, however, only been three (considerably less than 1 per cent. of production)—no comment called for!

Allen-Mercury motors thus have one great advantage over most of their rivals; they are designed, built and tested by practical model aircraft enthusiasts, who consequently know what other enthusiasts demand from a motor—and, as everyone knows, they supply it.

KAYDET

Continued from page 200

turned out 44 per cent. of the primary trainers produced in the U.S.A. during the war, reaching a peak delivery of 275 a month.

Construction of the *Kaydet* was in keeping with its conventional appearance. A basic rectangular, welded steel-tubing structure formed the fuselage, with formers and stringers added to confer an oval section. Forward of the main spar, easily-removable metal panels were fitted, and aft of it, normal fabric covering was used.

Wooden construction formed the wing panels, which were internally braced by a mixture of dural and steel tie-rods and were fabric-covered. The N.A.C.A. 2213 aerofoil was chosen and ailerons formed part of the lower wings only. Welded steel-tubing was employed also for the fabric-covered tail unit.

The main undercarriage was a very clean and sturdy cantilever, oleo-sprung unit. Ground-steering was by the brakes on the first versions, but, with the advent of the N2S-4, the tailwheel was made steerable.

Roving Report

Continued from page 192

described in our March issue. MVVS now quote the average output of this engine as 0.315 b.h.p. The Czech team to the Cranfield World Championships are likely to be equipped with these engines exclusively and should therefore offer a strong challenge.

* * *

Tailpiece . . . We like Ripmax's ribbed fuel tubing. It can be tied in a knot and will still let fuel through, and it doesn't seem to harden so



Ripmax's fuel tubing can be literally tied in knots without kinking.

quickly as some types. We soaked it in diesel fuel, and glowfuel, heated it and then, for good measure we popped it in the 'fridge' for a couple of days but failed to ruin it!



Club News

CROYDON & D.M.A.C.

Recent talks at the clubroom have led to an increase in enthusiasm. Jack North and Ed Bennett gave their impressions of what rubber models to build for the 1958 season, and seven replicas of North's design are now well on the way to completion. This model was actually modified from his 1957 design by chopping 1½ in. off each prop blade, 6 in. out of the fuselage, junking the pylon, making up the smaller motor, and adding ballast. The operation was completely successful because the old model never flew at all!

The club gala will be held on September 14th on Chobham Common, when the usual events will be run in the traditional Croydon manner.

HIGH WYCOMBE M.A.C.

Our C/L rally was held this year at R.A.F. Booker, in fine, sunny, but very windy weather. There were almost 100 entries in the three events and flying was to a high standard. Sid McGoun of West Essex, was right "on the ball," winning both "A" and "B" team races, and also turning in the fastest "B" heat time, of 3:48. Yeldham had the fastest "A" heat time—4 min. dead. Combat was the usual prang session, until the final, when with Tribe grounded the two Kenton boys flew gently round to fill up the remaining time.

RESULTS

Class "A"			
1. McGoun ..	West Essex ..	10 : 23	
2. Yeldham ..	Belfairs ..	11 : 55	
Class "B"			
1. McGoun ..	West Essex ..	8 : 16	
2. Rose ..	West Hants ..	9 : 42	
Combat			
1. Burbridge ..	Kenton		
2. Wilson ..	Kenton		

YORK M.A.S.

Membership of the York Society, which has been slowly declining during the past two years, has now taken a turn for the better. Early this year the society acquired accommodation at a local school; meetings are now held there every week during the winter and fortnightly in the summer season. Indoor flying facilities are available, so that the art of "microfilming" has once more come into its own.

The percentage of competition flyers has dropped noticeably since Ron Firth and one or two other stalwarts left us; new members being mainly C/L-crazy juniors. Nevertheless, we still have several R/C enthusiasts. Outstanding among these is Harold Budding, whose single-channel models have amassed scores of flying hours over the past year or so.

We have suffered along with the rest of the country from the atrocious weather conditions for the first two contest meetings of this season. The usual new models, painstakingly constructed over the past few months, were recklessly sacrificed to the hazards of Gamage day, and we were well and truly beaten by Wakefield's "A" team in the N.A. Knock-Out.

Among new models that have appeared this season are one or two promising A/2 gliders, yet

another R/C job—this time a Keil-Kraft Junior 60, and an interesting own-design lightweight rubber model by Peter Hollis.

BRIGHTON & D.M.A.C.

Gamage or damage, weather was as usual!! Wind won the battle on the club flying ground and only members Peter Brown and Tony Morris made attempts to fly in the C.M.A. Cup. One pair of folding wings put paid to any more attempts.

As is usual these days, the same familiar faces were in evidence. "If only some of you other members would have a go!!"

There is little chance of an amalgamation being effected between Brighton and Southern Cross clubs, as there are certain factions (and conditions) in both clubs very much against it. It is hoped, however, to hold inter-club competitions as have been held in the past, if only to prove and improve new models under competition conditions, and improve general relations between the clubs.

Our interests now include C/L—speed and stunt, and R/C, as well as F/F power, rubber and glider. New members will be made very welcome to the club. Anyone interested please contact Secretary, J. Watts, 11A, Lyndhurst Road, Hove, Sussex.

WHARFEDALE M.A.C.

The club is enjoying quite a prosperous season this year. In the more recent contests attended by the club, first place was attained by Les Davy in class "A" team race at the winter rally held at Rufforth; the combat prize was shared between J. Horton and R. Edwards (the final being unable to be finished due to bad light). The latter also shared the combat prize at the Colne rally.

F. Baxter won the All-England Area team-race rally in class "A" with a time of 8:10 for 10 miles; later the model was found to have a ¼ in. hole in the fuel tank which accounted for its low lappage of 30 per tank.

A few of our members were invited to the Wakefield club annual dinner at which the Nationals film was being shown. One or two members exhibited surprise at being upheld as potential film stars, everybody being amused at the particular shots of our secretary (Les Davy, adorned with his famous Davy Crockett hat) together with F. Baxter revelling in the turmoil of a team-race heat. Both members looked particularly spectacular in their gaily coloured shirts and odd coloured luminous socks. We would like to thank the Wakefield club for a very enjoyable evening.

FARNBOROUGH M.A.C.

The March club comp. was held in fairly calm conditions with occasional showers, which had considerable influence on the order of placings.

M. Beech's Frog 1.49 *Rhubarb IV* out-flew the 2.5 c.c. models, largely due to its floating glide. Second place went to Duncan Sibbick's Oliver-powered *Helicanth III*, who looked set for first place, but rain-induced wing-warp flattened the climb and consequently he was forced to lower revs for safety on the last flight.

With the light evenings here, F/F saucers

are being built and tested in anticipation of some sport flying. The most spectacular of these to date is Duncan Sibbick's version, powered by a Mills 0.75, which V.T.O.'s on a 6 x 4 prop., accompanied by noise and sparks!

ASHFORD M.A.C.

At a recent local handicraft exhibition we won 1st, 2nd and 3rd in the model section, and also 1st and 3rd in the photography section!

When one considers the thousands of cars which pass through our town en route for the Continent, it seems a pity that they could not bring back some of those elusive Continental motors.

There must be some bods who can afford a Continental holiday as well as building models.

OXFORD METEOR M.C.

Our main interests at the moment are in team racing and slope soaring. John Smith has just completed his 6 ft. span F/F *Stuka* and Ken Houlton is working on a helicopter powered along the principle of the Fairey Rotodyne. If this works it must be the most complex model ever. Our clubroom is now at Cowley Community Centre. Any new members are welcome.

CHEADLE & D.M.A.S.

At the Northern Models Exhibition the club collected five first prizes. Wally Neild, with his fine multi-channel radio-job, took three prizes: the "Aeromodeller Trophy," first in the radio section, and first in the open power section. Len Whalley took first prizes in glider and C/L.

URMSTON & D.M.F.C.

The team race crew started the season well by taking first and second places in class "A" at the Congleton Rally. The winning model averaged 80-85 m.p.h. for 40 laps on the new S.M.A.E. line length. K. Hulme managed second place in combat.

We would like to take the opportunity of thanking the Congleton M.F.C. for an informal and very enjoyable meeting.

CAMBRIDGE M.A.C.

Having recovered from an exacting week of R.T.P. flying, model building, defending models from small boys (and their fathers!), and answering numerous questions at the local model engineering exhibition, the club resumed its outdoor flying programme with the first round of the power contest, held at R.A.F. Oakington. The wind-sock remained in a near-horizontal position most of the day and several models came to grief, but the contest was well supported. R. Godden was placed first, M. Hobbs, a junior member, coming second.

Several members attended the Slope Soaring rally at Ivinghoe Beacon. The wind was very

AEROBODS OF NOTE



A. BRIGGS

A super scale C/L enthusiast. His four-motor "Flying Fortress" and "Lincoln" models made aeromodelling history.

strong and we found it hard work retrieving Dick Godden's *Hoverking*, which was in second place until it lost a wing tip after its first comp. flight, and was put out of the running. While on a retrieve, the club treasurer slipped and rolled down the steepest side of the ridge at about 20 m.p.h.; if he hadn't d/t'd before reaching the hard road below, I fancy we would have been clubbing together to buy a wreath at the next meeting!

The club rubber comp. was held at R.A.F. Oakington, in typical Cambridge contest weather; high winds and freezing cold. Nevertheless, five entries were received and flights of nearly 2 min. were recorded which, considering the weather, was quite a good effort. Repairs were carried out in a dugout on the airfield perimeter, into which members retreated whenever the cold overcame them. John King won the contest, and the top junior was Michael Hobbs, flying, of all things, a K.K. *Achilles*!

EXMOUTH & D.M.A.C.

Six members made the journey to R.A.F. Wroughton for the first of the Western Area comp. meetings.

Although the rubber lads were completely out of the picture the power boys returned home pleased with their efforts, having taken 2nd, 3rd, 5th and 8th places. In 2nd place was Ron Lippett with a *Calypso*; 3rd place was filled by Ken Bellingham, flying his O/D E.D. Racer powered pylon job; 5th, Den Baudet with his shoulder wing job, which had a completely cowed, inverted E.D. Racer, and in 8th place was Elvin Derrick flying his *Swiss Miss* which was also powered with an E.D. Racer. The lads all reckoned they would have done much better if they had not been bothered with timers, which continually gave short engine runs.

Judging by the number of enquiries received so far, the "1958 Devon Rally," which will be held on August 17th at Woodbury Common for F/F, R/C and combat, should have a good number of entries.

Anyone who would like to have full details should write to:— D. G. Baudet, 80, Moorfield Road, Withycombe, Exmouth, Devon.

ENFIELD & D.M.A.C.

Recent activity has been centred around our exhibition, and this year we decided to run a competition for the best model in the exhibition, and to present the winner with one of the cups presented by the *Model Engineer*, which we won with a team of models at the M.E. Exhibition one year.

Pete Wright and Mr. Hartwell, modelling father of one of our class "A" T/R bods, agreed to act as judges and in fact spent a whole afternoon trying to decide on the placings. Eventually they pronounced the winner as Vic Spence's Mills 0.75 powered scale Westland *Widgeon*, which placing was certainly well earned considering the number of years he's been building it, in fact it's almost a club legend by now! Second was Arthur Lucas's R.E.8, as yet uncovered, and third, Don Walker's new 1958 class "B" job, also as yet uncovered.

The exhibition itself was one of the best we have done so far, with 113 models and a better layout than before, and included a film show running almost continuously, thanks to Fred Carter and the Shell Film Library, and demonstrations of C/L and R.T.P. flying. This year we let the kiddies have a go at controlling the compressed air R.T.P. jobs, at 6d. a time and this was quite popular amongst those who turned out. Unfortunately, though, in spite of more publicity than before, the usual crowd did not materialise (about 400 instead of 1,000 plus).

Several of the "bods" piled into a couple of cars for the Beaulieu meet, to give the competition types an airing. Jim Moseley performed his Beaulieu ritual by leaving another Webra Mach-1 with pylon job somewhere out on the briny; and then to crown it, after carefully putting all the other models' fuses and tails in the car boot we drove away and left all his wings lying in the grass, and it was not until we were halfway back to London that someone remembered them! Poor old Jim, he's since heard that he'll have to go right down to Bournemouth to collect them.

The team race boys didn't do so good this time, all the class "A" models being eliminated in the heats, and the Pete Hartwell/George Allen class "B" job repeating "Radlett's" performance by catching fire, and finally knocking the shaft back against the rear of one of the West Essex gentlemen. Somehow, though, the Don Walker/Ray Tuthill team managed to muddle through into first place, although the time was

disgusting (about 8½ min.), in spite of the motor insisting on flooding at each stop, and the sudden disappearance of the "glow," with only two laps left.

The C/L rally is now definitely to be on July 13th, with classes as before, i.e. team race "A" and "B," combat, handicap speed, and this year stunt as well, to the current S.M.A.E. rules.

READING & D.M.A.C.

The main feature of the last meeting of the indoor season was a lecture by Ron Moulton. This went down extremely well. His remarks on the finer points of the design of American stunt C/L models and his model of a small R/C model were lapped up keenly. Even the usual inattentive types were silent. Probably over-awed. Will we see a spate of reliable R/C models this year?

The indoor contest which was going nicely has been declared null and void because of rule infringements. A great pity that.

NORTH KENT NOMADS

We have held our annual prize giving and dance which was well attended and was enjoyed by one and all, while at our recent annual general meeting a few changes were made including the election of a new chairman—Jack Ashcombe. We would like to express our grateful thanks to our ex-chairman—Mr. Berrons, for his devoted services during the past few years.

We were pleased to see a fine collection of models at our recent concours d'elegance, which showed that many modellers have been hard at it during the winter.

DE HAVILLAND (HATFIELD) M.A.C.

Arriving at our windswept flying ground on Gamage day, enthusiasm was further dampened by the discovery that almost half of it had been ploughed up, which presumably means standing crops later in the year, fortunately, on this occasion the wind was in a favourable direction.

It was recently our turn for the Nationals' film. We were pleased to welcome Henry J. Nicholls who came along to show the film and to say a few words to an appreciative audience of about 35 members and visitors including a party from Stevenage M.F.C.

Membership at the moment is rather low. The club is open to employees of any of the de Havilland companies. Those interested should get in touch with secretary, P. E. Williams, 59, Hohne Road, Hatfield.

STEVENAGE M.F.C.

During the past month club activities included a visit of 14 members to Hatfield Aircraft (de Havilland) M.A.C. to see the S.M.A.E. Nationals' film which was thoroughly enjoyed by all. The addition of a sound track, however, would be a terrific help to the film, but many thanks to H. J. Nicholls and the group for producing a fine film, the colour of which was most impressive.

Visiting Henlow for the area centralised Pilcher Cup, members found conditions windy but dry. During precontest trimming, J. Brooks was unfortunate to damage both his entries and decided it was just not his day! In the first round G. Dallimer was unable to release from the line and was lucky not to write off the model in a poor flight of 0:26; however, he went on to complete 3:00 min. max's in the remaining two rounds which made the first round heart-breaking to say the least.

Surprising change of interest by the C/L boys is to rubber duration—now we know what that well kept secret was. This indicates the keen rivalry between members, for G. Stickland after flying F/F power through the winter has produced a C/L "Wing" which shocked the experts by taking off vertically and going into an inverted lap on its first flight—without assistance from the centre of the circle either.

BAILDON M.F.C.

"Damage Day" lived up to its evil reputation—on Baildon Moor, at least—and several models finished it in a lot more pieces than their designers had intended. Perhaps the unluckiest was Stan Eckersley, whose glider (after a first flight max.) hit some high-tension wires and was then finally demolished by a herd of frisky young bulls in the field beneath; but, among others, Bill Lakeland's new rubber model was not improved by a large boulder which fell on it while the owner was negotiating a dry stone wall, and Henry Tubbs pranged his twice, broke the wing carrying it and finally wrecked the fuselage when the motor broke during winding! Top man in

glider—wait for it!—was Arthur Collinson with 6:03, while two juniors very creditably filled second and third places.

At Rufforth, Arthur once more forsook power models for gliders to come out on top of the area (his first flight being 6½ min.); and it was left to Silvio to give us second place in the power comp. with 8:49. While all this was going on our "B" and "C" teams were also busy discovering which of them was destined to survive the first round of the area knock-out, and it was the "C" team, captained by Frank McNulty, which eventually emerged triumphant by quite a comfortable margin.

Stop press. Keep it dark, but rumour has it that Arthur Collinson is taking up R/C.

SOUTH EASTERN AREA

Gumbots and snow were the order of the day at Ashdown Forest on Easter Sunday for the first area meeting of 1958. A good entry was received for all comps, some interesting tailless models were flown by the Southern Cross contingent and by J. Fox, country member, the best score of these was Fox with 5:31. Highest scorer in the open glider event was R. Boxall of Brighton with 8:15. The first leg of a triangular match between Men of Kent, Tunbridge Wells and Sevenoaks clubs resulted in Tunbridge Wells leading with 55 points, Sevenoaks and M.O.K. following up with 40 points each.

SCOTTISH A.A.

The association has received permission to hold its F/F Nats. at Abbotsinch, and as usual, all competitors must have third party insurance, and must be able to produce evidence of such, while our C/L Nats. will now be held on June 29th, because of the change in date of the P.A.A. rally.

WHITEFIELD M.A.C.

We had our usual crop of entries in the Northern Models Exhibition, and emerged with six places.

J. O'Donnell and D. Tinker topped rubber. E. Horwich and J. Cope both placed second in F/F, scale and radio respectively, and two juniors, M. Smutt and A. Benson filled the vacancies for second and third in the junior section.

At the area centralised comp. on Easter Sunday, glider fliers flopped, only one max. being scored by M. Watson. Meanwhile, in Jetex, J. O'Donnell won with a 37:1 ratio. Next day at the Congleton C/L rally, T. Jolly minced through mediocre competition to win combat.

GODALMING & D.M.F.C.

The club are holding their C/L rally on Sunday, June 15th, at the Farncombe Meadow Recreation Ground. Classes are for "A" and "B" T/R and combat; all to current S.M.A.E. rules.

Entries will close at 12 noon, and insurance cards will be insisted upon. Further information from D. R. Dew, 62, Kings Road, Farncombe, Surrey (s.a.e. please).

WIGAN M.A.C.

The Pilcher Cup held in the N.W. at Stretton, saw S. Wood fly his o.d. glider into third place with a total of 7:20, with club member T. Rhead a close fourth with same glider design.

On Easter Monday at Congleton, D. Morgan and F. Anderton won first place speed, achieving 116 m.p.h. with a 3.5 job. As there was no speed pylon available, we are told it does not constitute a record. The same two were well placed with their team racer until the up line broke, with disastrous results.

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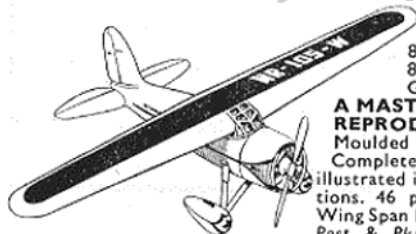
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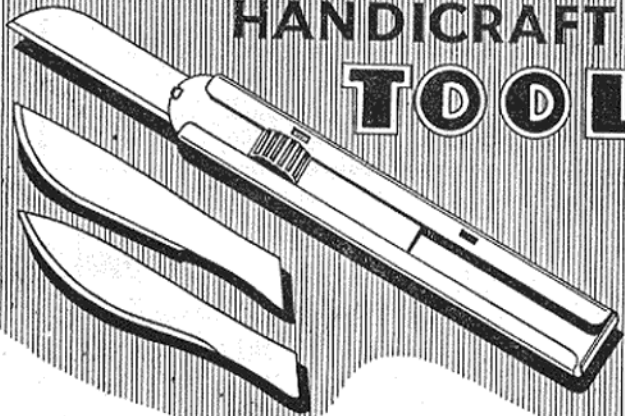
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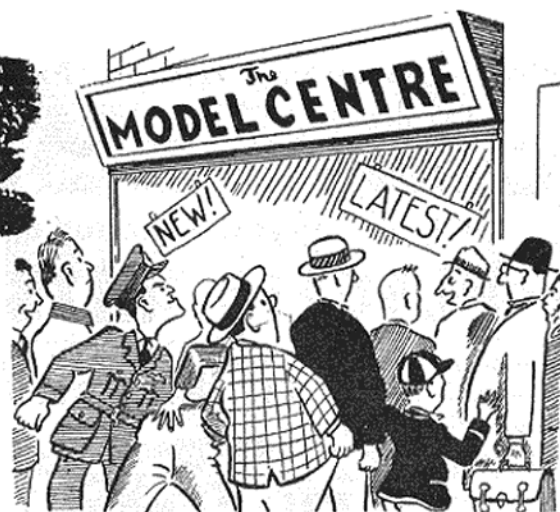
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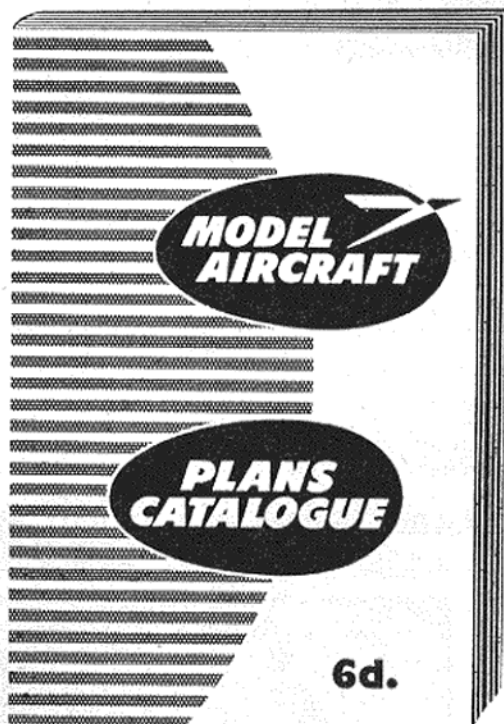
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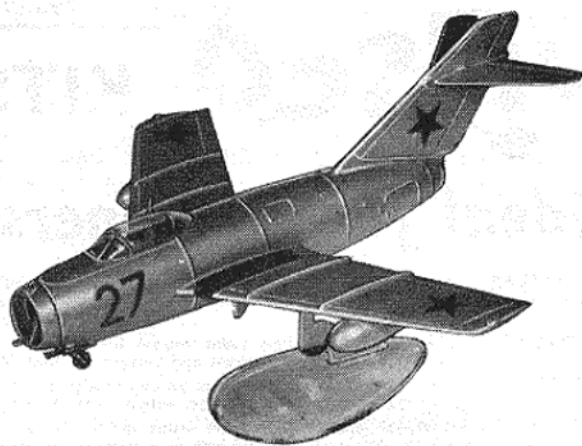
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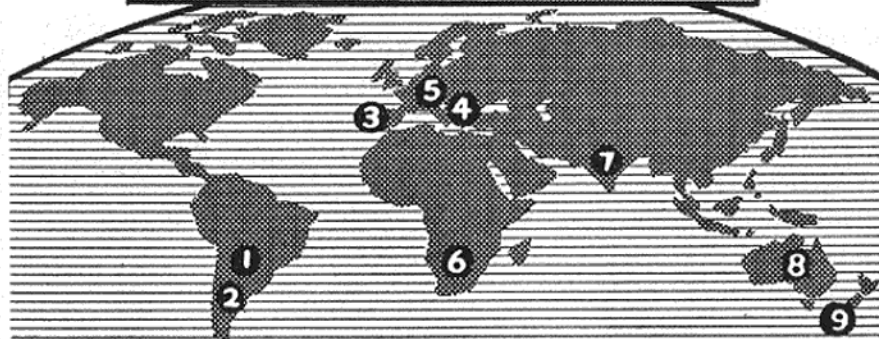
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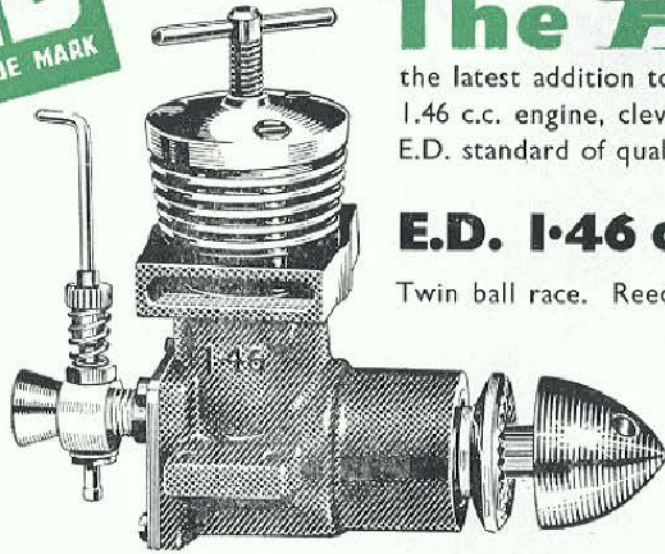
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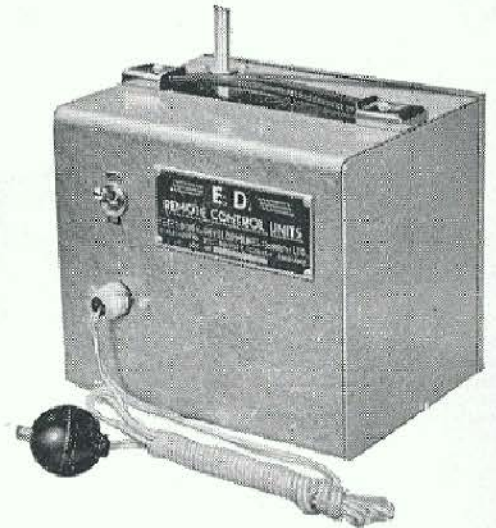
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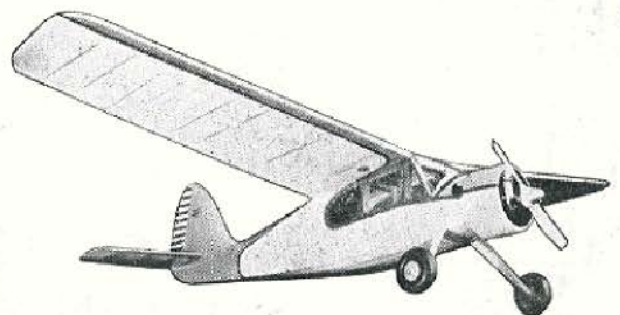
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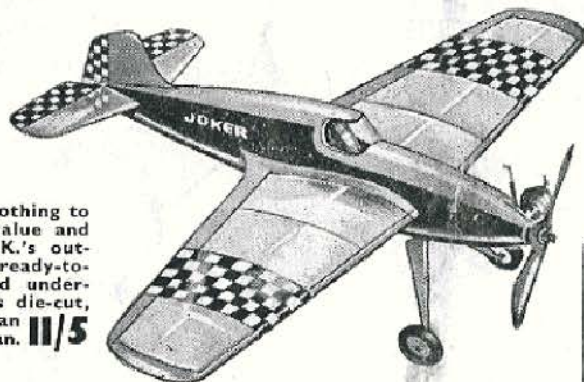
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